

A

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Certification-Hfd.Co.Met. Com.

Civil Service System-Ord.#25

Entitlement to collect taxes, etc.
Bynum Ridge-Sub-Division

242

To repeal Ord. #15

2-402

C

C

D

E

F

F

Greenspring Hills Dev.

Ordinance #18-A

2-398

G

G

Hfd. Co. Metropolitan Com.	Sub-Division Bynum Ridge Certification to collect taxes, etc.	242
Hfd. Co. Planning & Zoning Com.	Resolution- Amendment Master Plan	326
Hfd. Co. Dog Ordinance	Ordinance # 19	328
Hfd. Co. Peddlers & Solicitors Ord.	Ordinance # 23	2-364
Hfd. Co. Peddlers & Solicitors Ord.	Ordinance # 24	2-369
Hfd. Co. Planning & Zoning Com.	Letter, Re: Planning Items of	2-372
Hfd. Co. Planning & Zoning Com.	Resolution-Amending Master Plan	2-373
Hfd. Co. Planning & Zoning Com.	Letter, Re: Planning Items of	2-376
Hfd. Co. Ordinance #204 Dog	To repeal & re-enact Sect. IV, "Licensing"	2-390
Hfd. Co. Ordinance #25-Civil Service	To repeal Ord. #15	2-402

H

H

I

1

2

3

4

5

J

J

K

K

L

L

M

M

Mc

Mc

N

N

Ordinance # 6-R-3	Amending Zoning Map #55, 3rd Dist.	239
Ordinance # 6-S-3	Amending Zoning Map #41, 3rd Dist.	240
Ordinance # 6-T-3	Amending Zoning Map #40, 3rd Dist.	241
Ordinance # 6-U-3	Amending Zoning Map # 66, 1st Dist.	243
Ordinance # 6-V-3	Amending Zoning Map # 64, 1st Dist.	244
Ordinance # 6-X-3	Amending Zoning Map # 61, 1st Dist.	245
Ordinance # 6-W-3	Amending "I-P" Industrial Park Dist. Co. Zoning Ordinance,	246
Ordinance # 6-Y-3	Amending Zoning Map # 41, 3rd Dist.	270
Ordinance # 6-Z-3	Amending Zoning Map # 32, 4th Dist.	271
Ordinance # 6-A-4	Amending Zoning Ordinance dated Dec. 3, 1957	272
Ordinance # 6-B-4	Amending Zoning Map # 61, 1st Dist.	282
Ordinance # 6-C-4	Amending Zoning Map # 61, 1st Dist.	283
Ordinance # 6-D-4	Amending Zoning Map # 23, 4th Dist.	284
Ordinance # 6-E-4	Amending Zoning Map # 41, 3rd Dist.	285
Ordinance # 6-F-4	Amending Zoning Map # 58, 2nd Dist.	286
Ordinance # 6-G-4	Amending Zoning Map #55, 3rd Dist.	287
Ordinance # 6-H-4	Amending Zoning Map #41 & 50 ^{& 49} , 3rd Dist.	288
Ordinance # 6-I-4	Amending Zoning Map # 56, 1st Dist.	289
Ordinance # 6-J-4	Amending Zoning Map # 41, 3rd Dist.	290
Ordinance # 6-K-4	Amending Zoning Map # 41, 3rd Dist.	291
Ordinance # 6-L-4	Amending Zoning Map # 66, 1st Dist.	292
Ordinance # 18	To Repeal & Re-enact Ordinance #17	293
Ordinance #6-M-4	Amending Zoning Map # 58, 1st Dist	295
Ordinance #6-N-4	Addition Section 4.14-A Amending Zoning Ordinance # 6	296
Ordinance #6-O-4	Amending Zoning Map #40 - 3rd Dist.	305
Ordinance #6-P-4	Amending Zoning Map #42 - 3rd Dist.	306
Ordinance #6-Q-4	Amending Zoning Map #55 - 3rd Dist.	307
Ordinance #6-R-4	Amending Zoning Map #65 - 1st Dist.	308
Ordinance #6-S-4	Amending Zoning Map #65 ^{& 66} - 1st Dist.	309
Ordinance #6-V-4	Amending Zoning Map #40 - 3rd Dist.	311
Ordinance #6-W-4	Amending Ordinance #6-Sec.#20.462	312
Ordinance #6-T-4	Amending Zoning Map #32 - 4th Dist.	314
Ordinance #6-U-4	Amending Zoning Map #32 - 4th Dist.	315
Ordinance #6-X-4	Amending Zoning Map #41 - 3rd Dist.	316
Ordinance #6-y-4	Amending Zoning Map #63, 66, & 67, Dist 2	317
Ordinance #6-Z-4	Amending Zoning Map #65 - 1st. Dist.	318
Ordinance No. 6-A-5	Amending Zoning Map #43 - 2nd. Dist.	319A
Ordinance #6-B-5	Amending Zoning Map #62 - 1st. Dist.	320
Ordinance #6-C-5	Amending Zoning Map #56, 57, 61, & 62, 1st. Dist.	321
Ordinance #6-D-5	Amending Zoning Map #65 - 1st. Dist.	323
Ordinance #6-E-5	Amending Zoning Map #28 - 5th. Dist.	324
Ordinance #6-F-5	Amending Zoning Map #41 - 3rd. Dist.	325

Ordinance # 6-H-5	Amending Zoning Maps #41 & 49, 4th. Dist. GRG	2-338
Ordinance # 6-G-5	Amending Zoning Map #32, 4th. Dist.	2-339
Ordinance # 6-J-5	Amending Zoning Map #42, 3rd. Dist.	2-340
Ordinance # 6-I-5	Amending Zoning Map #49, 3rd. Dist. & #56	2-341
Ordinance # 6-L-5	Amending Zoning Map #41, 3rd Dist.	2-342
Ordinance # 6-K-5	Amending Ordinance #6, Sect. 4.21, & 11.015	2-343
Ordinance # 6-N-5	Amending Zoning Map #61, 1st. Dist.	2-345
Ordinance # 6-M-5	Amending Zoning Map #56, 3rd. Dist.	2-346
Ordinance # 22	To repeal Ord. #12 etc. & re-enact #22	2-347
Ordinance # 6-O-5	Amending Zoning Map #40, 3rd. Dist.	2-351
Ordinance # 6-Q-5	Amending Ordinance #6,	2-352
Ordinance # 6-P-5	Amending Zoning Map #9, 4th. Dist.	2-353
Ordinance # 6-R-5	Amending Zoning Map #56, 1st. Dist.	2-354
Ordinance # 6-S-5	Amending Zoning Map #41, 3rd. Dist.	2-355
Ordinance # 6-T-5	(Org. #61 & 65) #61-E & 65-E, 1st. Dist.	2-356
Ordinance # 6-U-5	Amending Supplementary Zoning Maps (#61-F)	2-357
Ordinance # 6-X-5	Amending Zoning Map #61, 1st. Dist.	2-357
Ordinance # 6-W-5	Amending Zoning Map #5, 5th. Dist.	2-358
Ordinance # 6-V-5	Amending Zoning Map #65, 1st. Dist.	2-359
Ordinance # 6-Y-5	Amending Zoning Map #56, 1st. Dist.	2-360
Ordinance # 6-Z-5	Amending Zoning Map #64, 1st. Dist.	2-362
Ordinance # 6-A-6	Amending Zoning Map #41, 3rd. Dist.	2-363
Ordinance # 6-B-6	Amending Zoning Ordinance # 6	2-366
Ordinance # 6-C-6	Amending Zoning Ordinance # 6	2-368
Ordinance # 6-D-6	Amending Zoning Maps #61, 62, 66, 1st. Dist.	2-371
Ordinance # 6-E-6	Amending Zoning Map #65, 1st. Dist.	2-377
Ordinance # 6-F-6	Amending Zoning Map #27, 5th. Dist.	2-378
Ordinance # 6-G-6	Amending Zoning Map #62, 1st. Dist.	2-379
Ordinance # 6-I-6	Amending Zoning Map #58, 2nd. Dist.	2-380
Ordinance # 6-J-6	Amending Zoning Map #48, 3rd. Dist.	2-381
Ordinance # 6-K-6	Amending Zoning Map #62, 1st. Dist.	2-382
Ordinance # 6-L-6	Amending Zoning Ordinance #6	2-383
Ordinance # 6-M-6	Amending Zoning Map #56, 1st. Dist.	2-385
Ordinance # 6-N-6	Amending Zoning Ordinance #6	2-386
Ordinance # 6-O-6	Amending Zoning Map #61, 1st. Dist.	2-387
Ordinance # 6-P-6	Amending Zoning Map #58, 2nd. Dist.	2-388
Ordinance # 6-Q-6	Amending Zoning Map #56, 1st. Dist.	2-389
Ordinance # 6-R-6	To repeal & re-enact Section 4, "Licensing"	2-390
Ordinance # 6-S-6	Amending Zoning Map #33, 3rd. Dist.	2-392
Ordinance # 6-T-6	Amending Zoning Map #55, 3rd. Dist.	2-393
	Amending Zoning Map #19, 5th. Dist.	2-394
	Amending Zoning Map #50, 2nd. Dist.	2-395
	Amending Zoning Map #66, 1st. Dist.	2-396

Ordinance # 6-U-6	Amending Zoning Map #41,3rd.Dist.	GRG 2-397
Ordinance # 18-A	Greenspring Hills -Roads,1st,Dist.	2-398
Ordinance # 6-U-6	Amending Ordinance #6,	2-400
Ordinance # 6-X-6	Amending Zoning Map#49, 3rd.Dist.	2-404
Ordinance # 6-W-6	Amending Zoning Map#42, 2nd.Dist.	2-405
Ordinance # 6-Z-6	Amending Zoning Map #56 & 61,1st./ Dist.	2-406
Ordinance # 6-Y-6	Amending Zoning Map #61, 1st. Dist.	2-407
Ordinance # 6-A-7	Amending Zoning Map #48,&55, 3rd./ Dist.	2-408



Peddlers & Solicitors Ordinance

Ordinance # 23

2-364

Peddlers & Solicitors Ordinance

Ordinance # 24

2-369

P

P

1

2

3

4

5

Q

Q

Resolution

Resolution

Resolution

Co.Road Code &Standard Specifications	
Co. Commrs.Hfd. Co. Adopting Hfd.	1
Co. Commrs. & Multiview Cable Co.	
Approval of license Agree. between	273
Standard Specifications	
Amendments to Hfd.Co.Road Code &	2-319

R

R

I

I

I

I

I

S

S

1

2

3

4

5

T

T

U

U

I

I

I

I

I

V

V

1

2

3

4

5

W

I

I

I

I

I

X

1

2

3

4

5

Y

1

2

3

4

5

7

LIBER

2

PAGE

1

RESOLUTION

OF THE BOARD OF COUNTY COMMISSIONERS OF HARFORD COUNTY ADOPTING THE HARFORD COUNTY ROAD CODE AND STANDARD SPECIFICATIONS.

WHEREAS, pursuant to the powers and authority vested in the County Commissioners of Harford County under Article 13 of the Code of Public Local Law of Maryland title "Harford County" sub-title "Roads" Section 441 (e) provisions for regulation of design and construction of roads in Harford County, but to exclude areas within incorporated towns within the limits of Harford County, Maryland, which will be known as the Harford County Road Code and Standard Specifications.

NOW THEREFORE, BE IT RESOLVED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY;

1. A copy of the regulations will be kept at all times in the Office of the County Commissioners, 45 South Main Street, Bel Air, Maryland.
2. Copies of said regulations can be purchased at the price of \$25.00 per copy from the Office of the Department of Public Works.
3. The Harford County Road Code and Standard Specifications will become effective January 1, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

Abe Davis
Abe Davis, Chairman

D. Franklin McGinnis
D. Franklin McGinnis

John H. O'Neill
John H. O'Neill



William O. Whiteford
William O. Whiteford
Administrative Assistant

DATE:

December 21, 1965

LIBER 2 PAGE 2
TABLE OF CONTENTS

PART I

	Pages
Road Construction Code.....	I-1 - I-11

PART II

Standard Specifications

Division A - General Requirements.....	II-1 - II-16
Division C - Construction Details	
Part I - Earthwork.....	II-17 - II-29
Part II - Base Courses.....	II-30 - II-49
Part III - Surface Courses & Pavements.....	II-50 - II-78
Part IV - Structures.....	II-79 - II-97
Part V - Miscellaneous & Incidental Structures...	II-98 - II-113

PART III

Design Standards.....	III-1 - III-34
-----------------------	----------------

LIBER

2

PAGE

3

PART I

HARFORD COUNTY ROAD CONSTRUCTION CODE

ROAD CONSTRUCTION CODE - Revised April 5, 1965

Sec. 100-7.

This article shall be known as the "Harford County Road Construction Code" and is hereinafter referred to as the "Code."

Sec. 100-8. Definitions.

As used in this Code:

- (a) Road includes street, highway, avenue, lane, alley and viaduct, or any segment or part of the length thereof.
- (b) Construction and constructed includes reconstruction and reconstructed, but shall not include maintenance.
- (c) Subdivision means any division of land in which the owner or owners shall create streets, roads, avenues, lanes, alleys with or without lots or building sites. In addition, the term subdivision shall include any division of lands, by plat or by deeds containing metes and bounds descriptions, in which new streets, roads, avenues, lanes, alleys are created to serve interior building lots not fronting on a public highway. The term subdivision shall include the conveyance of building lots along a public highway for the purpose of developments by a series of three or more deeds in which metes and bounds descriptions are employed, unless each lot is two (2) or more acres in area and with two hundred (200) feet or more of road frontage. This definition is not intended to include a testamentary division of land; a division of land upon dissolution of a bona fide partnership in existence for two or more years; a division of land among the immediate members of a family for personal use, and not for development; or a division of land for agricultural purposes.
- (d) Drainage structure includes culvert, bridge, storm sewer, catch basin, canal, ditch, subsurface drain and any structure or water-course designed to carry off surface or other waters.
- (e) Person includes individual, association, firm, partnership, corporation but does not include governmental agency, whether County, Federal, State or Municipal.
- (f) Director means the Director of the County Department of Public Works and his duly authorized agents.
- (g) Dedication plat means any plat conforming to law, duly recorded among the land records of the county, which has the legal effect of dedicating one or more rights-of-way to public use.

- (h) Permittee means a person, firm or corporation who has applied for and holds a valid permit in full force and effect, issued by the Director of the Department of Public Works, authorizing construction in a public right-of-way.

Sec. 100-9. Applicability of Code.

This Code shall apply to all roads within the county other than: (1) Roads lying within the limits of any incorporated city, town, or village of the county or which may hereafter be created, insofar as the city, town, village or taxing area has the authority to enact or adopt regulations on the subject matter of this Code; (2) state roads; (3) federal roads; (4) roads on a private right-of-way.

Sec. 100-10. Standards and specifications.

Except as otherwise provided, the construction of all roads shall conform to the minimum requirements, standards and specification hereinafter provided. Whenever used in this Code, the word "standards" means Harford County Design Standards, and the word "specifications" means Harford County Standard Specifications. The Administrative Assistant to the County Commissioners shall keep among his official records the standards and specifications, as adopted by the Commission, together with any amendments thereto, signed by the Chairman of the Commission and attested by the Administrative Assistant thereof. The Director of Public Works shall also prepare and make available to the public printed copies of this Code and of such standards and specifications, and they shall be given such free distribution or sold for such price as the Commissioners may by resolution determine.

Sec. 100-11. Classification and minimum requirements.

Roads not specifically classified in any zoning or master highway plans approved by the Harford County Planning and Zoning Commission shall be classified as provided in this section by the Planning and Zoning Commission after first receiving the recommendations of the Subdivision Review Committee.

All roads shall be classified as provided in this section and minimum requirements for each class are hereby established as follows:

- (A) "Business District Road" means any road which lies within or is contiguous to any area which has been recommended or approved for any class of commercial or industrial use in any zoning or master highway plan approved by the Harford County Planning and Zoning Commission. Business district roads shall be constructed in conformity with the following minimum requirements:
- (1) Width. The right-of-way shall be at least seventy feet wide. Paving shall be at least forty feet wide.

- (2) Construction. The entire right-of-way shall be graded and there shall be installed paving, drainage structures, concrete curbs, and gutters and sidewalks.
 - (3) Standards and specifications:
 - (a) Grading. All grading shall be done in accordance with plans and profiles approved by the director, Standard R-1 and Specifications Article C-1 through Article C-9.
 - (b) Drainage structures. See subsection (f) of Section 100-12 of this Code.
 - (c) Paving. Paving shall be of the required width and in accordance with Standards for Pavement Design I, and the applicable specifications indicated thereon.
 - (d) Curbs and gutters. Curbs and gutters shall be built in accordance with Standard R-12 and Specifications Article C-51.
 - (e) Sidewalks. Sidewalks shall be built five feet from the property line to the back line of the curb and in accordance with Standard R-1 and Specifications Article C-52.
- (B) "Collector Road" means any road which serves to carry traffic to or from several primary or minor roads, and connects them to other collector roads or to arterial highways, and usually also serves the primary function of providing access to abutting properties.
- (1) Width. The right-of-way for all collector roads shall be at least sixty (60) feet wide. The pavement shall be twenty-four (24) feet wide and the road bed thirty-eight (38) feet wide.
 - (2) Construction. Where a collector road passes through or abuts a subdivision and the average lot width is one hundred (100) feet or more, the area shall be graded to a width of forty feet (40) as shown on Standard R-2, there shall be installed drainage structures, paving to a thirty (30) foot width, and bituminous concrete curbs. Where a collector road passes through or abuts a subdivision and the average lot width is less than one hundred (100) feet, the entire right-of-way shall be graded, and there shall be installed drainage structures, paving to a thirty-six (36) foot width and concrete curbs and gutters. Sidewalks shall be constructed on both sides of the road where the average width of the lots is less than one hundred (100) feet at the building line, unless the Planning and Zoning Commission shall decide that, due to the rural character or location of a particular subdivision, or for other just reasons, sidewalks need not be built therein or in a specific portion therein.

- (3) Standards and specifications:
- (a) Grading. All grading shall be done in accordance with plans and profiles approved by the Director, Standard R-2 and Specifications Article C-1 through Article C-9.
 - (b) Drainage structures. See subsection (f) of Section 100-12 of this Code.
 - (c) Paving. Paving shall be of the required width and in accordance with Standards for pavement design I and the applicable specifications indicated thereon.
 - (d) Curbs and gutters. Curbs and gutters shall be built in accordance with Standard R-12 and Specifications Article C-51.
 - (e) Sidewalks. When required, sidewalks shall be built in accordance with Standard R-11 and Specifications Article C-52.

(C) "Minor Road" means any road which is principally used to serve local traffic. Such roads shall be constructed according to the following minimum requirements:

- (1) Width. The right-of-way for all rural roads shall be at least fifty (50) feet wide. The pavement shall be at least twenty (20) feet wide and the roadbed shall be at least thirty (30) feet wide.
- (2) Construction. All minor roads in or abutting a sub-division, and the average lot width is one hundred (100) feet or more the area shall be graded to a width of thirty-six (36) feet as shown on Standard R-3 and there shall be installed drainage structures, paving to a twenty-four and one-half (24½) feet width with bituminous concrete curbs. Sidewalks shall be constructed on both sides of the road where the average width of the lots is less than one hundred (100) feet at the building line, unless the Planning and Zoning Commission shall decide that, due to the rural character or location of a particular subdivision, or for other just reasons, sidewalks need not be built therein or in a specific portion therein.
- (3) Standards and specifications:
 - (a) Grading. All grading shall be done in accordance with plans and profiles approved by the Director, Standard R-3, and Specifications Article C-1 through C-9.
 - (b) Drainage structures. See subsection (f) of Section 100-12 of this Code.
 - (c) Paving. Paving shall be of the required width and in accordance with Standards for Pavement Design II and applicable specifications indicated thereon.

- (d) Curbs and gutters. Curbs and gutters shall be built in accordance with Standard R-12 or Specifications Article C-51.
 - (e) Sidewalks. When required, sidewalks shall be built in accordance with Standard R-11 and Specifications Article C-52.
- (D) "Dual Lane Road" means any road which has two separate roadways divided by an island or grass plot, and designed for one-way traffic in each roadway. (A dual lane road shall be classified as a business district road, or collector road.)

Whenever a dual lane road is constructed pursuant to a zoning or highway plan approved by the Harford County Planning and Zoning Commission, it shall conform to the following minimum requirements:

- (1) Width. The right-of-way shall be at least one hundred (100) feet. The width of pavement of each roadway shall be twenty (20) feet.
- (2) Construction. The entire right-of-way shall be graded and drainage structures and paving shall be installed. Wherever required by this Code for the particular class in which a dual lane road is placed, curbs and gutters and sidewalks shall be installed.
- (3) Standards and specifications:
 - (a) Grading. All grading shall be done in accordance with plans and profiles approved by the Director, Standard R-4 and Specifications Article C-1 through C-9.
 - (b) Drainage structures. See subsection (f) of Section 100-12 of this Code.
 - (c) Paving. Paving shall be of the required width and conform to standards and specifications for business district, collector or minor roads according to the particular class in which the road has been placed.
 - (d) Curbs and gutters. Curbs and gutters shall be built on both sides of each roadway of a dual lane road in accordance with Standard R-12 and specifications applicable to the particular classification in which such dual lane road has been placed.
 - (e) Sidewalks. When required, sidewalks shall be built on each side of a dual lane road on the side of the respective roadway upon which the building lots abut, and in accordance with either Design Standard R-11 as determined by the particular classification of the road, and in accordance with Specifications, Article C-51.

Sec. 100-12. General Provisions.

(a) Wherever alternative standards and specifications are provided for in the preceding section, any one alternative may be chosen at the option of the person applying for a permit.

(b) The County Commissioners shall erect name signs at all road intersections at the expense of the developer.

(c) Temporary turn arounds or cul-de-sacs shall be required wherever the paving of a road ends otherwise than at a paved road intersection. Such turnaround or cul-de-sacs shall be graded, paved and appropriate drainage structures including temporary curbs installed as the County Commissioners find necessary and in accordance with Standard R-10.

(d) Where a preliminary drainage study indicates that a minimum right-of-way width as established in this Code is inadequate for proper drainage of a particular road, the County Commissioners may require such additional right-of-way as is found necessary for such drainage purposes; provided, that such requirement is made prior to the final approval and recording of a dedication plat among the land records of the County.

(e) The construction of half roads or any road of less than the minimum width as required by this Code is hereby prohibited; provided, that construction of such portions of roads shall be permitted where the dedicated portion of the road established by a dedication plat and recorded among the land records of the County prior to the adoption of this Code is of sufficient width to permit the grading and construction of paving eighteen feet in width with curbs and gutters and sidewalks as are required by the design standards in those sections of this Code applicable to the particular classification of the road under construction. No road shall be constructed unless it connects with an existing road at one end thereof, and no road shall be constructed short of an intersection except where it connects with an existing road or where the dedication of the right-of-way ends short of an intersection. Where any road construction ends at or goes through an intersection, the intersection shall be completed, and if it ends at other than an intersection or a point of connection with an existing road, then turnarounds or cul-de-sacs shall be provided.

(f) Whenever drainage structures are required for any particular class of road, such drainage structures shall be installed or constructed as are found by the County Commissioners to be necessary or appropriate after a preliminary drainage study has been approved by the Department of Public Works in accordance with design standards and all applicable specifications.

(g) Driveway entrances to individual lots shall be required upon a finding by the Planning and Zoning Commission that off-street parking facilities are necessary and practicable in accordance with Standard R-7, R-8, or R-9, whichever may apply.

Sec. 100-13. Applications for grading and construction permits.

(a) No person shall construct any road, sidewalk, curb and gutter or drainage structure, or begin any of such construction, without first obtaining a permit therefor. Applications for such permits shall be made to the Director on such forms as he shall prescribe, and shall be accompanied, in each case, by detailed plans and specifications and locations and right-of-way plats bearing the tentative approval of the Planning and Zoning Commission, the Harford County Metropolitan Commission and the approval by the State Roads Commission shall also be required as to matters within its jurisdiction.

(b) No person, including any utility corporation or governmental agency, shall cut any road without first obtaining a permit from the Director. All backfilling and repaving of such utility trenches shall be under the supervision of the Director according to Standard R-16 and all applicable specifications.

(c) No person shall construct sidewalks, driveway entrances, retaining walls, steps, cut curbs or construct or place any temporary or permanent structure within a County right-of-way without first obtaining a permit therefor from the Director.

(d) In the case of a subdivision, the signature of the Director of Public Works on the approved construction plans shall constitute a permit to perform all items appearing on these plans.

Sec. 100-14. Conditions of Permits.

Construction permits shall be issued upon the following conditions, which shall be specified therein:

- (a) Irrespective of the plans and specifications accompanying the application, the actual construction shall conform to law and to the minimum requirements for a road of its class.
- (b) Such permit shall be transferrable upon application to the Department of Public Works by the successor in title.
- (c) Such permit shall automatically expire one year after its issuance unless extended in writing by the County Commissioners stating the reasons for the extension. No extension shall be granted unless the bond filed with the permit by its term continues in full force and effect or a new bond is filed or the consent of the surety to the extension is obtained.
- (d) The permittee and his agents, servants and subcontractors shall comply with all written requirements of the Department of Public Works directed to the permittee, which are deemed necessary in the interest of public safety or for the avoidance of unnecessary inconvenience to the public during such grading or construction, either before or during the course of grading or construction.
- (e) The construction work, materials, plans and specifications shall at all times be open to and available for inspection by duly authorized officials and employees of the County.

Permittees shall give notice to the Department of Public Works at least forty-eight hours in advance prior to commencing any construction for which the permit is issued.

- (f) No permit for paving shall be issued unless there has been a final inspection and approval of grading by the Director.
- (g) The permittee shall have available at all times on each project a copy of the permit for inspection by the representative of the Department of Public Works. If such permit is lost or destroyed, the permittee shall cause such permit to be replaced within twenty-four hours, excluding Saturdays and Sundays. The Department of Public Works shall issue new permits upon request to replace any which are damaged, lost or destroyed.
- (h) No permit shall be issued for construction unless the right-of-way has been acquired by the County or shown on an approved plat.
- (i) Whenever, in the opinion of the Director, the conditions of any permit are being violated, the Director may order, by certified mail, the permittee to stop construction and to show cause within 10 days why the permit should not be revoked. The willful refusal of any permittee to stop construction after receiving notice of a stop work order shall be deemed a violation of this Code.
- (j) Upon a finding that the standards and specifications are not feasible or practicable for a particular project, the Director may require such alternate or additional standards and specifications in accordance with good engineering principles, as may be deemed necessary, and such alternate or additional requirements shall be part of and a condition of the permit.
- (k) Whenever in the opinion of the Director, the work is being performed improperly or the work performed is faulty, he may cause the permit to be revoked, or order that portion of the work performed to be corrected.

Sec. 100-15. Performance bond.

The minimum improvements which a permittee will be required to make or enter into agreement to make, in a subdivision prior to the approval of the final plat thereof by the Planning and Zoning Commission, shall be completed in full compliance with the requirements, standards and specifications for each of the various units of work as contained in the Road Code adopted by the Harford County Commissioners.

All of the improvements required shall be completed prior to filing with the Planning and Zoning Commission the Final Plat of the Subdivision for approval, in accordance with the standards and specifications and under the supervision of the Department of Public Works.

If a Subdivider desires approval of a Final Plat for the recording thereof prior to the completion of, or acceptance by the County of the required improvements, a Subdivision Agreement shall be executed by the Subdivider, as provided in paragraph 6.08 of the Subdivision Regulations.

In lieu of completing the improvements as required the Subdivider may;

(a) deliver to the County a corporate bond in such amount as is estimated to be the total cost of the project. Such corporate bond shall run to the County, and be conditioned as follows:

- (1) That the permittee, his agents and servants will comply with all the applicable terms, conditions, provisions, requirements, standards, and specifications of this Code.
- (2) That the permittee, his agents and servants will faithfully complete the work for which the permit is issued.
- (3) That the permittee, his agents and servants will save harmless the County from any expense incurred through the failure of the permittee, his agents and servants, to complete the work as required by this Code, or from any damages growing out of the negligence of the permittee or his agents or servants.

(b) Before acceptance, the bond shall be approved by the County Commissioners and the County Attorney. The bond shall be executed by a surety or guaranty company qualified to transact business in the state. All corporate bonds filed hereunder shall be released upon but not before acceptance of the completed road by the County in accordance with the following section.

(c) In lieu of filing a corporate bond as required by subsections (a) and (b) of this section, any person may enter into an agreement with the County, to be approved and executed on behalf of the County by the County Commissioners, providing that the permittee shall deposit with the County Commissioners such sum of money as is estimated by the Department of Public Works to be the total cost of the project. The agreement shall itemize the several phases of work or construction in sequence, with an amount opposite each phase representing the value of the work and materials of that particular step or phase in the work or construction. Upon completion of each step or phase, the permittee shall notify the Department of Public Works that he is ready for an inspection. The County Commissioners are hereby authorized to refund to the permittee upon receipt of a certificate, signed by the Director, certifying that the work has been performed by the permittee according to standards, specifications, and minimum requirements of this Code and any waiver granted pursuant to Section 100-17 of this Code, and that the permittee is entitled to the installment due for completion of such work. Such certificate shall also be signed by the permittee, certifying that an inspection has been made by a named inspector for the particular

step or phase of work or construction involved for which the installment is due. Upon final completion of all work for which the permit is issued, a final inspection certificate shall be issued and, upon acceptance of the road by the County Commissioners, the final payment shall be made to the permittee. The final draw or payment under the terms of the agreement shall in no event be less than fifteen per cent of the total cost of the project.

(d) The County Commissioners may, in their discretion, in lieu of filing a corporate bond or cash equivalent to the total cost of the project as provided for in sub sections (a) (b) and (c) of this section, approve the deposit of such sum of money as is estimated by the Department of Public Works to be one-half the total cost of the project. The agreement shall itemize the several phases of work or construction in sequence, with an amount opposite each phase representing the value of the work and materials of that particular step or phase in the work or construction. Upon completion of each step or phase, the permittee shall notify the Department of Public Works that he is ready for an inspection. The County Commissioners are hereby authorized to refund to the permittee upon receipt of a certificate, signed by the Director, certifying that the work has been performed by the permittee according to standards, specifications, and minimum requirements of this Code, and any waiver granted pursuant to Section 100-17 of this Code, and that the permittee is entitled to the installment due for completion of such work, providing, however, that the balance of cash remaining on deposit is sufficient to complete the remaining uncompleted phases of construction as estimated in the public works agreement. Such certificate shall also be signed by the permittee, certifying that an inspection has been made by a named inspector of the Department of Public Works for the particular step or phase of work or construction involved for which the installment is due. Upon final completion of all work for which the permit is issued, a final inspection certificate shall be issued by the Director and, upon acceptance of the road by the County Commissioners, the final payment shall be made to the permittee.

Sec. 100-16. Acceptance by County.

All permittees and their agents and servants shall comply with all applicable provisions of this Code, and until a road constructed under the provisions of this Code is accepted for maintenance by the County, the permittees, their agents and servants, and the bond given under this Code shall remain liable for the faithful performance of the provisions. After completion and upon receipt of a written request of the permittee a final inspection shall be made of the road within fifteen (15) days, and the County Commissioners shall either accept such road upon a finding that the construction of same has complied with this Code, and release the bond or they shall reject the road by written notification to the permittee and his surety, where a corporate bond has been posted, specifying the reasons for such rejection by reference to the particular provision of this Code which has been violated, and

allow a reasonable time, to be specified therein, for such permittee or his surety to comply with the provisions of this Code. If the permittee or his surety does not thereafter, within the time specified, complete the construction according to the provisions of this Code, then the County Commissioners shall forthwith proceed to do whatever is necessary to cause the construction to comply with this Code and the permittee and his bond shall thereupon be liable for any expense incurred thereby. Any acceptance of a road by the County Commissioners shall be on behalf of the County by their written order, fully identifying the road. Thereafter the road shall be maintained at County expense. Where cash has been deposited pursuant to subsections (c) and (d) of the preceding section and a road is not accepted, the County may withhold any funds remaining in the cash deposit account until compliance by the permittee with the provisions of this Code. If the permittee does not comply, the County Commissioners may declare forfeit such amount as is required to effect compliance.

Sec. 100-17. Waiver.

(a) The requirements of this Code for grade percentages may be waived pursuant to the standards herein contained by the County Commissioners after receiving recommendations thereon from the Director of the Department of Public Works and the Planning and Zoning Commission.

(b) Grade percentages. A waiver may be granted when the proposed road connects with an existing road in such manner that the grade percentages required by the Code cannot be provided. A waiver may also be granted whenever it is found that adherence to the grade-percentage requirements of the Code would result in a substantial depreciation in the value of the houses or buildings previously constructed on the lots abutting the proposed street.

Sec. 100-18. Penalty.

Any person, firm or corporation intentionally violating any provisions of this Code shall be guilty of a misdemeanor and upon conviction thereof shall be liable to a fine not exceeding \$100. or imprisonment for a period not exceeding thirty (30) days in the Harford County jail or to both fine and imprisonment for each offense; and it shall be the duty of the States Attorney of this County to prosecute all persons accused of violating the provisions of this Code.

LIBER 2 PAGE 15
PAVEMENT DESIGN STDS-I

TYPICAL SECTION

PRIMARY ROADS-BUSINESS DISTRICT ROAD

	S.R.C. BIT. CONC. SPEC. "B" MIX DESIG.	S.R.C. BIT. CONC. BANK R. GRAV. MIX DESIG.
1-1/2" BITUMINOUS CONCRETE SURFACE COURSE	PC-1-61	PC-1-61
1-1/2" BITUMINOUS CONCRETE BINDER COURSE	PC-1-61	PC-1-61
4" BITUMINOUS CONCRETE BASE COURSE	P-3	G-3
SUBGRADE		

ALTERNATE NO. 1

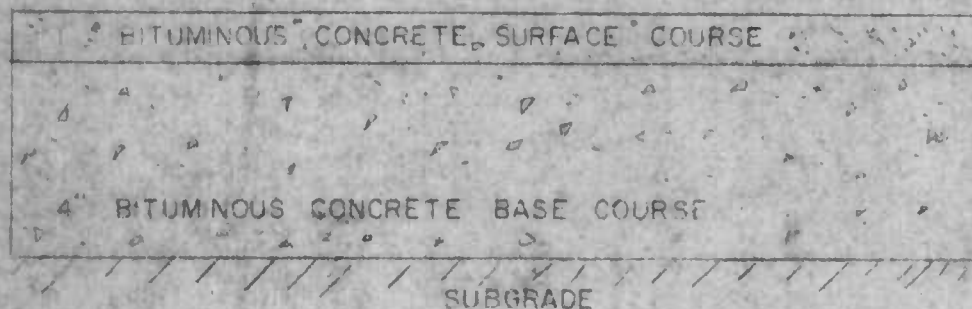
1" BIT. CONC. SURF. COURSE	PF-1
3" PENETRATION MAC.	
8" CR-467 OR 10" GRAVEL SUB-BASE	
SUBGRADE	

ALTERNATE NO. 2

1" BIT. CONC. SURF. CRS.	PF-1
2" BIT. CONC. BASE CRSE	P-1
8" CR-467 OR 10" GRAV. SUB-BASE	
SUBGRADE	

Subgrade shall be compacted so that it is firm, hard and unyielding. It shall be compacted to 95% of dry weight density as determined by A.A.S.H.O. Designation T-99 Method A. After compaction it shall be true to the lines and grade as set forth in the plans. After final rolling the subgrade shall be tested with a ten (10) foot straight edge laid parallel with the sides of the pavement and any depressions or high spots exceeding 1/2" shall be corrected.

Pavement shall not be placed on subgrades that are wet, soft, yielding, and/or on unsuitable material. All soft and unstable material and other portions of the subgrade which will not properly compact, or serve the purpose intended shall be removed and disposed of, and replaced with suitable material.

PAVEMENT DESIGN: STDS-II
TYPICAL SECTIONRURAL ROADS-RESIDENTIAL SECONDARY ROADSS.R.C.
BIT. CONC.
SPEC. "B"
MIX DESIG.S.R.C.
BIT. CONC.
BANK-R GRAV.
MIX DESIG.

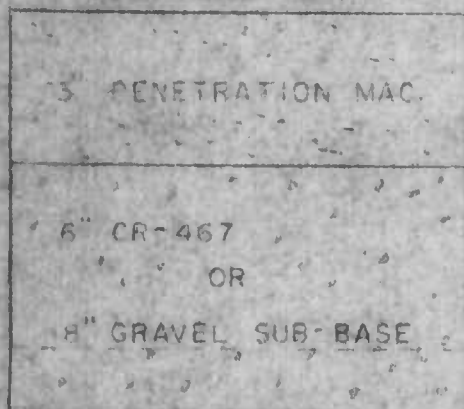
PF-1

PF-1

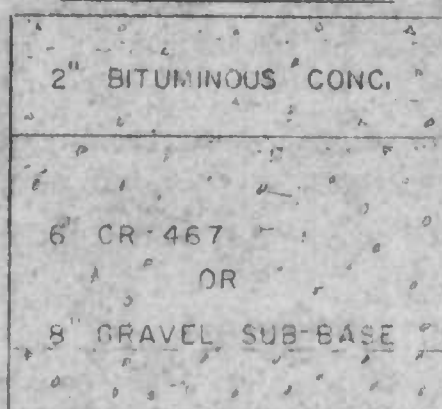
P-3

G-3

SUBGRADE

ALTERNATE NO. 1

SUBGRADE

ALTERNATE NO. 2

SUBGRADE

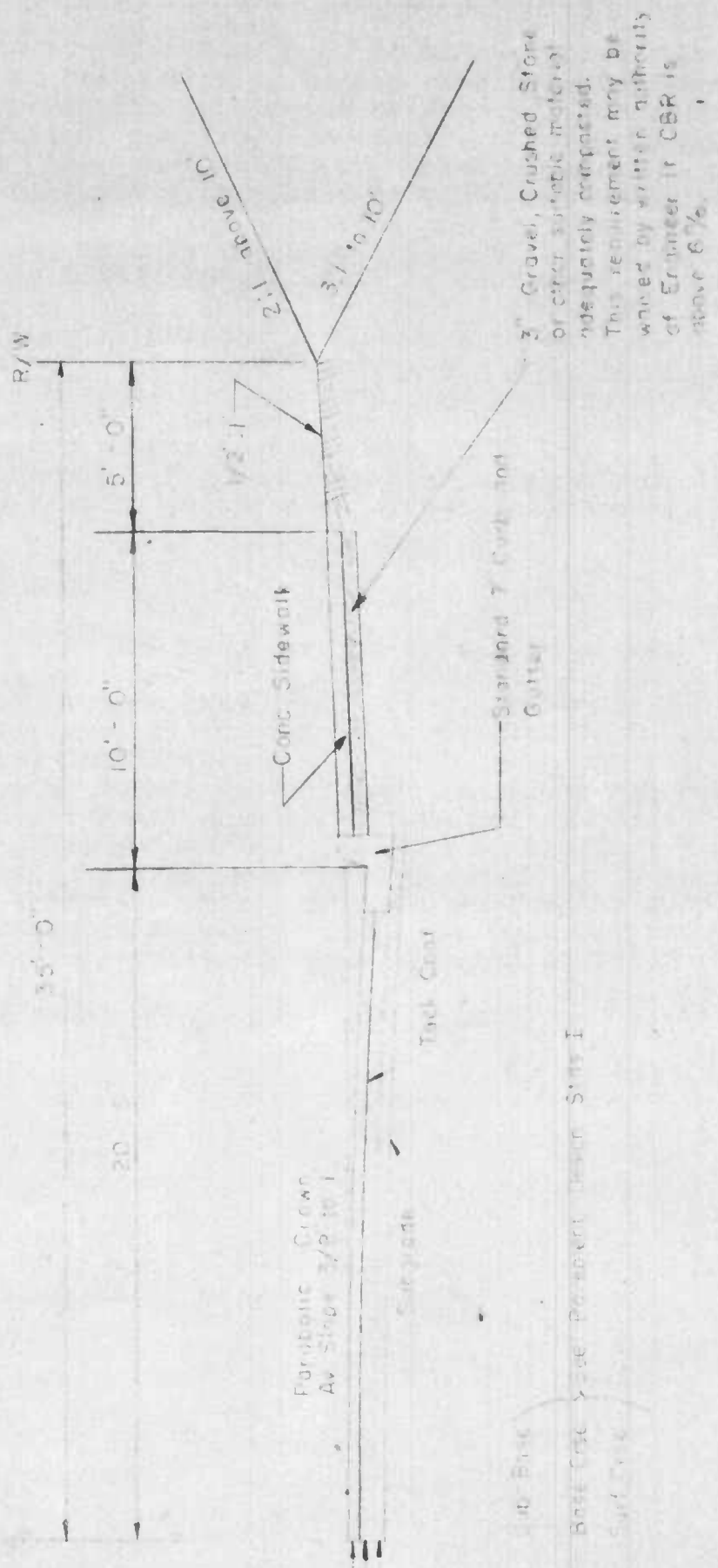
PC-1-6I

PC-1-6I

SUBGRADE

Subgrade shall be compacted so that it is firm, hard and unyielding. It shall be compacted to 95% of dry weight density as determined by A. S. H. O. Designation T-99 Method A. After compaction it shall be true to the lines and grade as set forth in the plans. After final rolling the subgrade shall be tested with a ten (10) foot straight edge laid parallel with the sides of the pavement and any depressions or high spots exceeding 1/2" shall be corrected.

Pavement shall not be placed on subgrades that are wet, soft, yielding, and/or on unsuitable material. All soft and unstable material and other portions of the subgrade which will not properly compact, or serve the purpose intended shall be removed and disposed of, and replaced with suitable material.



REVISED
DATE BY

STANDARD ROAD A STREET DETAILS

HUNTERS DISTRICT ROAD

REVIEWED

APPROVED

HARFORD COUNTY

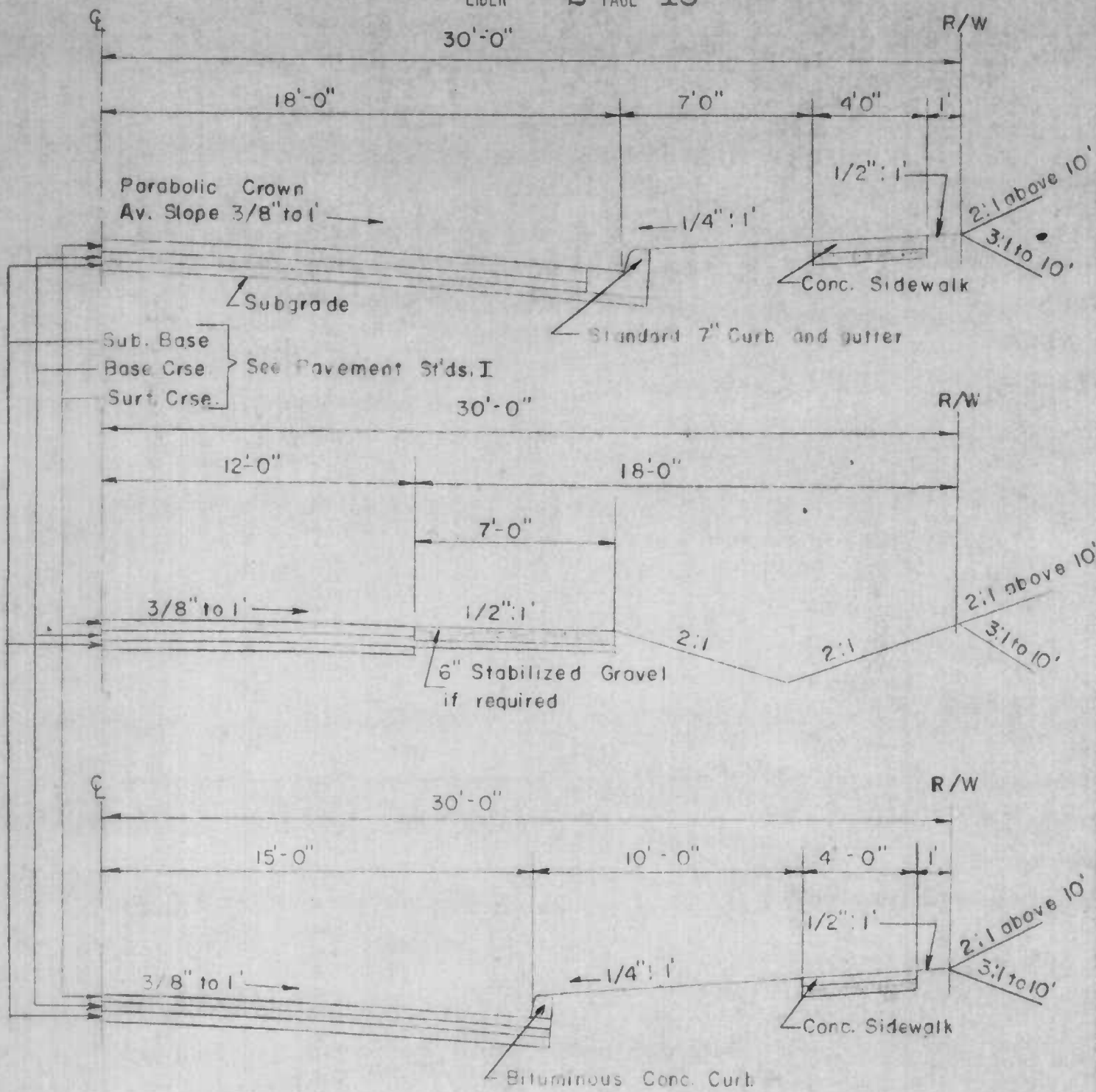
DEPARTMENT OF PUBLIC WORKS

R. J. Coughlin
DIRECTOR

James J. Hamilton
DIVISION OF ENGINEERING

DATE 1/1/66

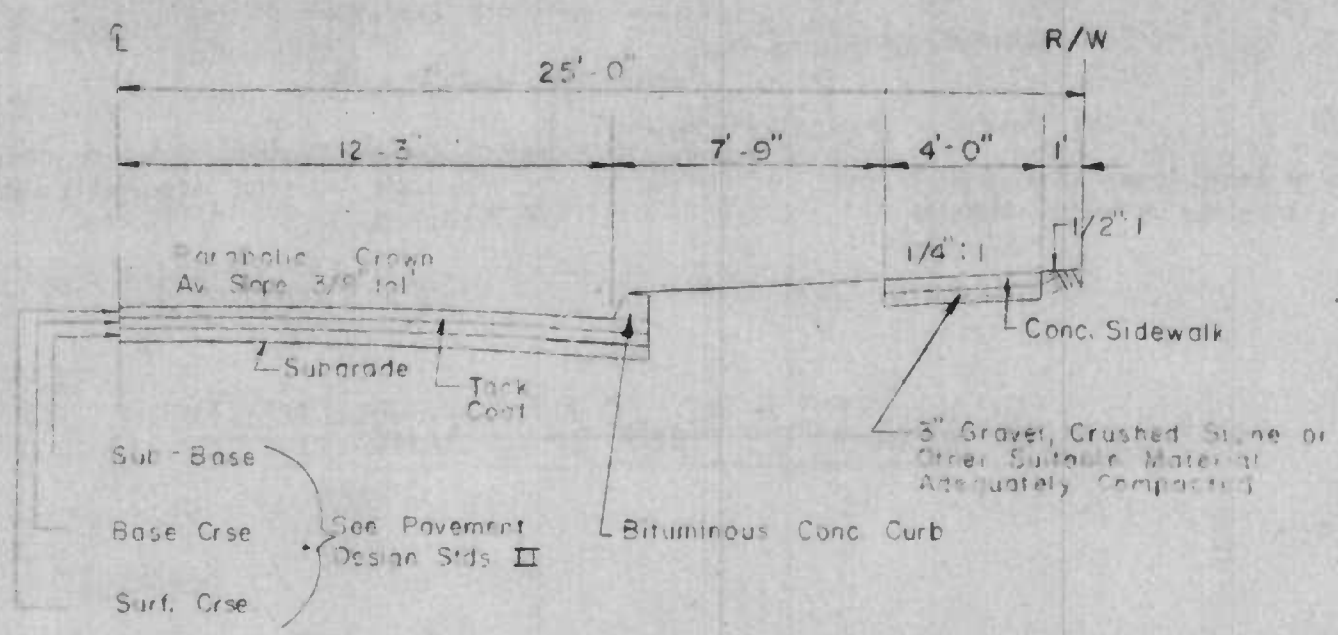
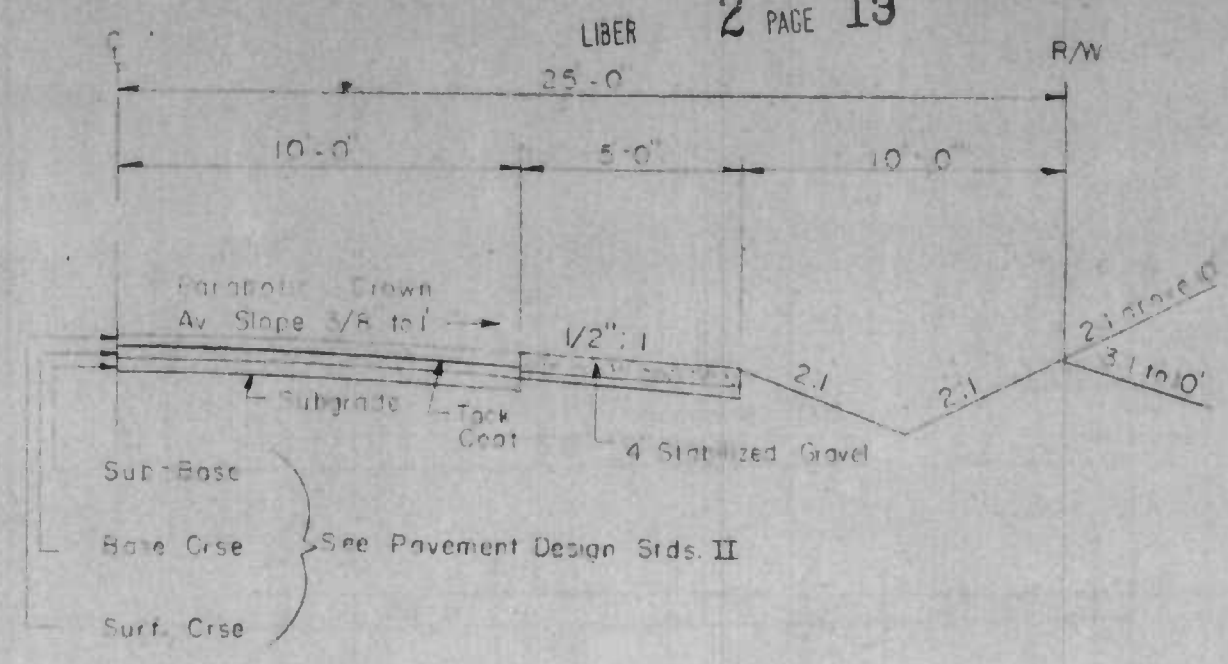
R-1



Conc. Sidewalks to be 3" Gravel, Crushed Stone or other suitable material adequately compacted.

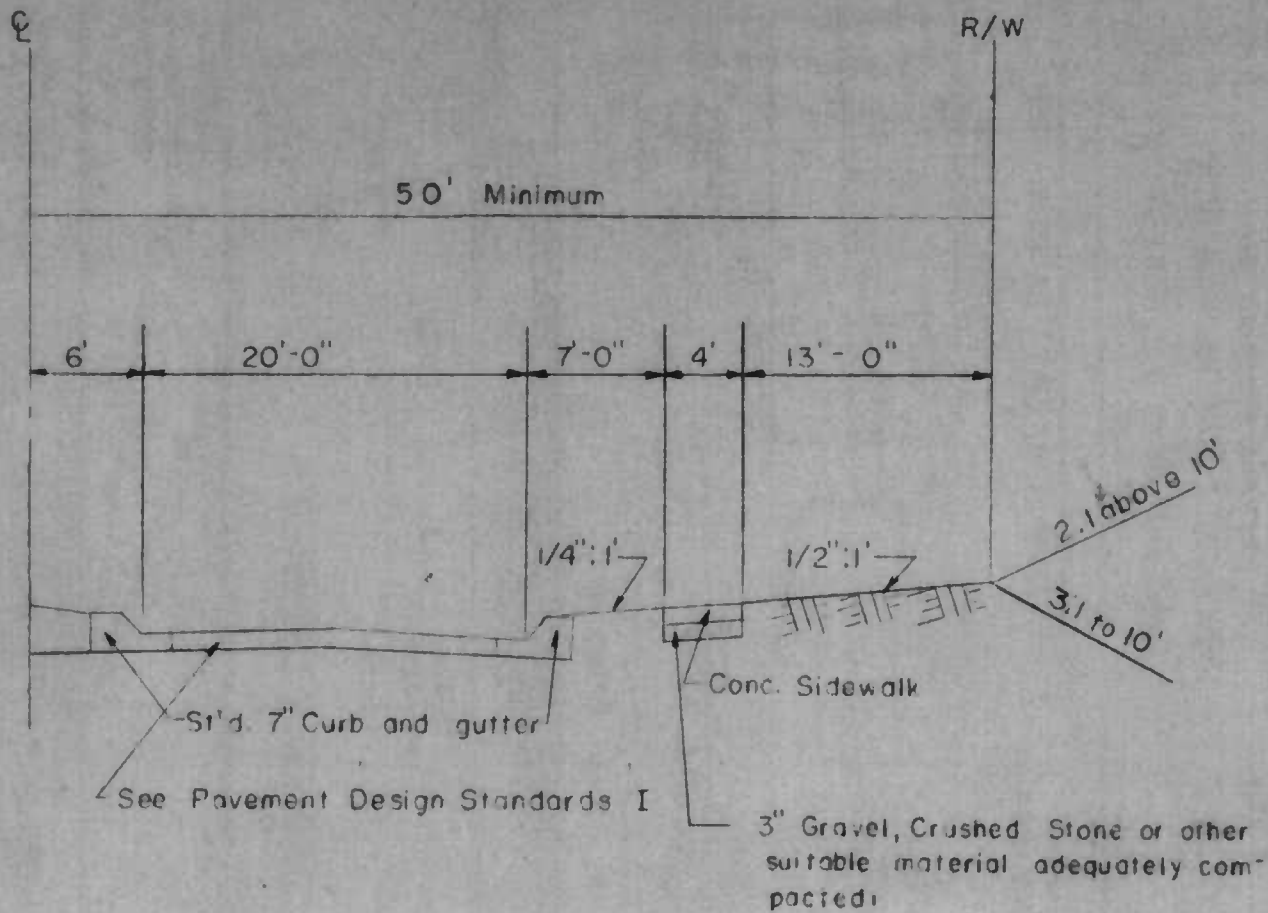
REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. J. Gonyak</i> DIRECTOR	REVIEWED	(60' R/W)
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING		COLLECTOR ROAD - 36' PAVEMENT
	DATE 1/1/66		COLLECTOR ROAD - 24' PAVEMENT
			COLLECTOR ROAD - 30' PAVEMENT
			R-2



REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>L. J. Clegg</i> DIRECTOR	REVIEWED	STANDARD ROAD & STREET DETAILS	R-3
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING		MINOR ROAD-50' R/W	
	11/1/66 - DATE			



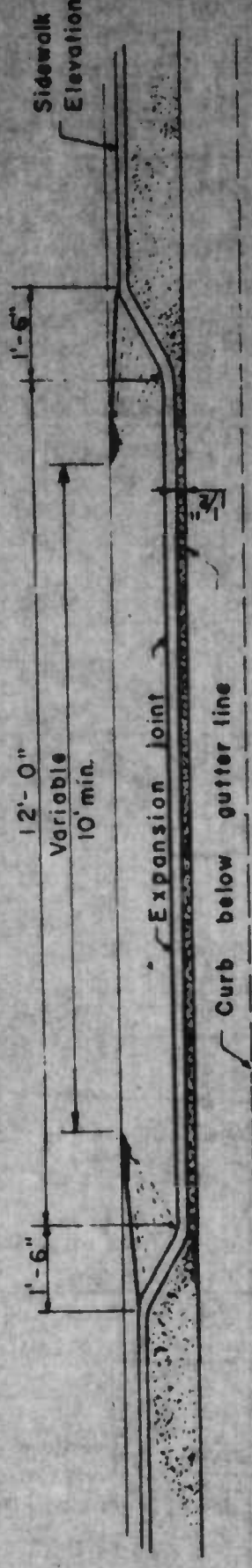
DUAL LANE ROAD-20' MINIMUM PAVEMENT

REVISED	
DATE	BY

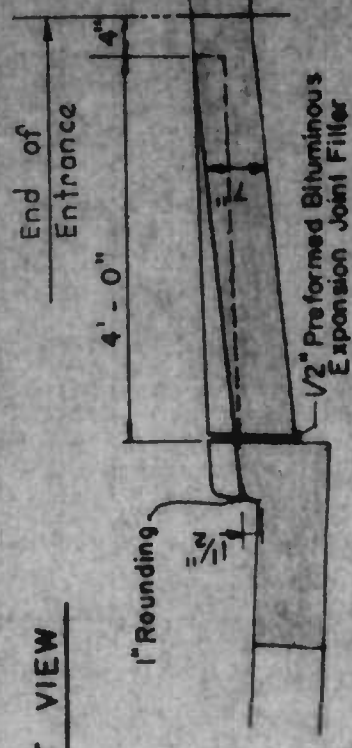
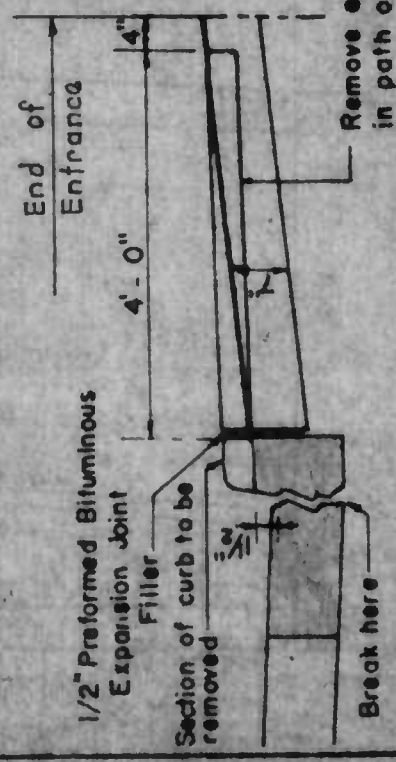
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>R. G. Gandy</i> DIRECTOR	REVIEWED	STANDARD ROAD & STREET DETAILS	
	<i>Harold J. Hamilton</i>		DUAL LANE ROAD	
	1/1/66 - DATE		(100' R/W)	R-4



DRIVEWAY ENTRANCE



FRONT VIEW



SECTION - DRIVEWAY IN NEW CURB

SECTION - DRIVEWAY IN EXISTING CURB

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS

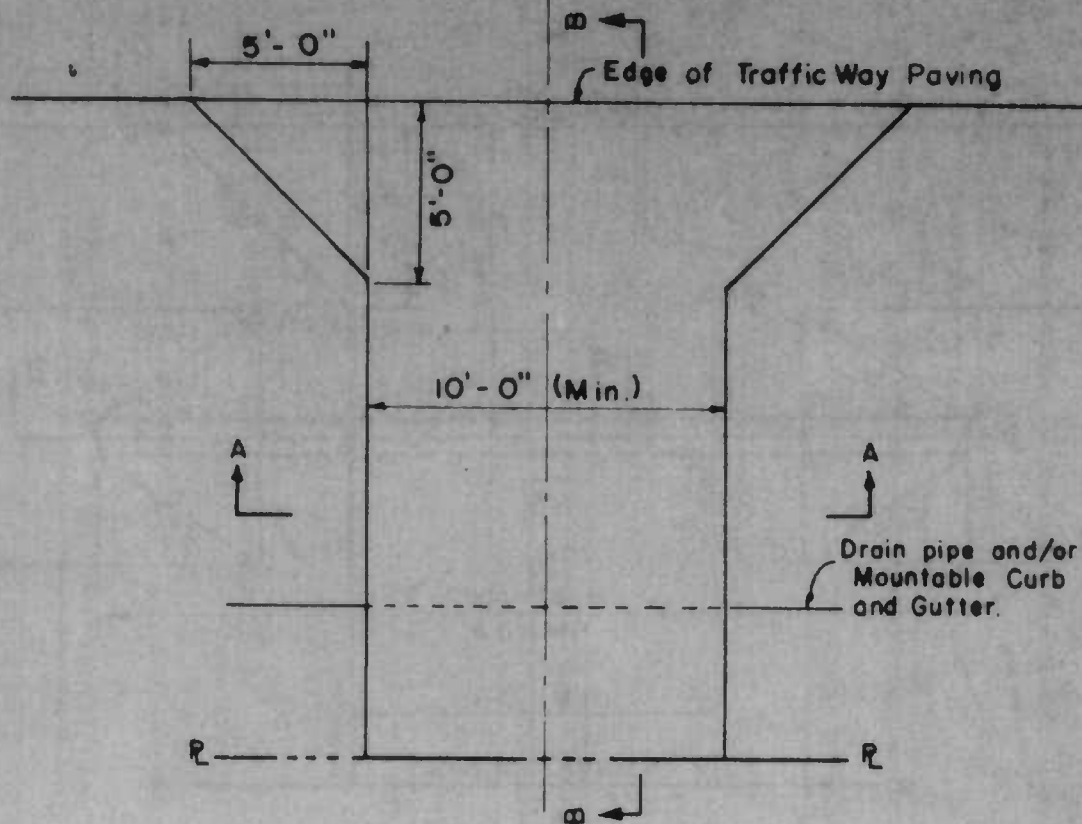
APPROVED
DIRECTOR
DIVISION OF ENGINEERING
DATE

REVIEWED

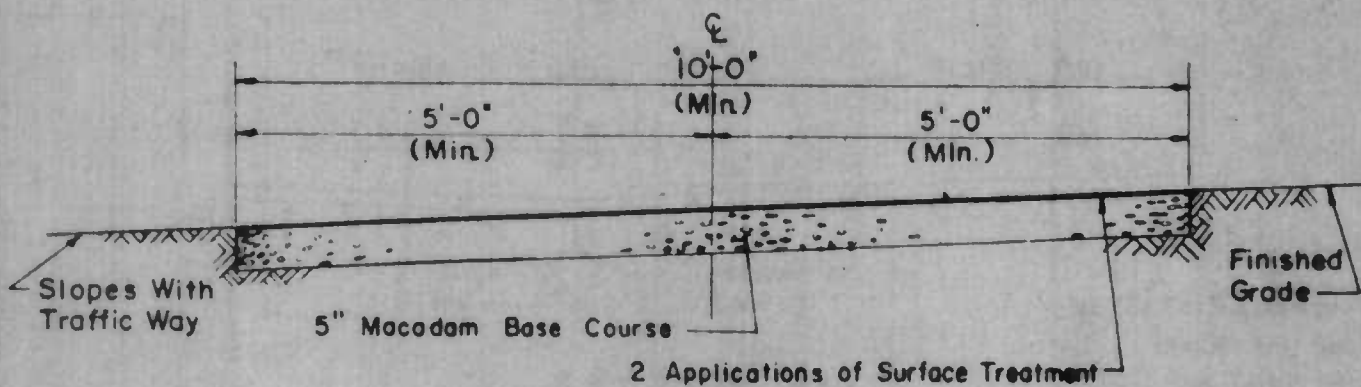
STANDARD ROAD & STREET DETAILS
TYPICAL DRIVEWAY ENTRANCE
SIDEWALK ABUTTING CURB

R-7

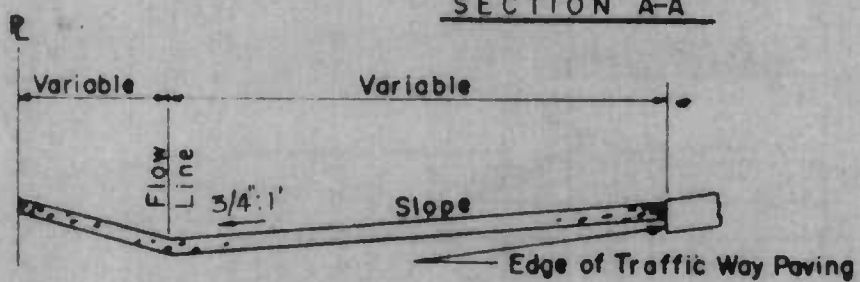
REVISOR	DATE	BY



PLAN



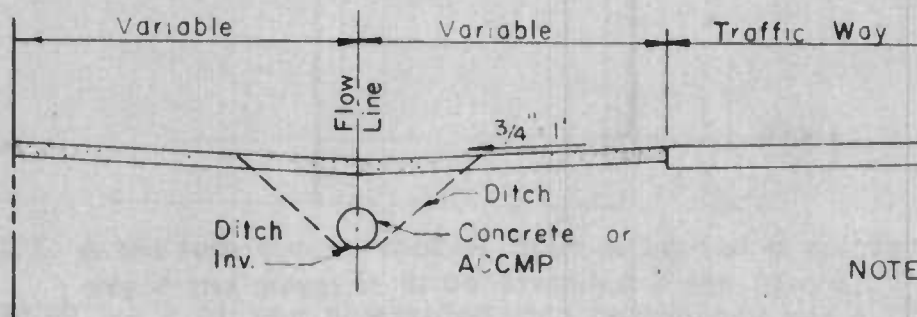
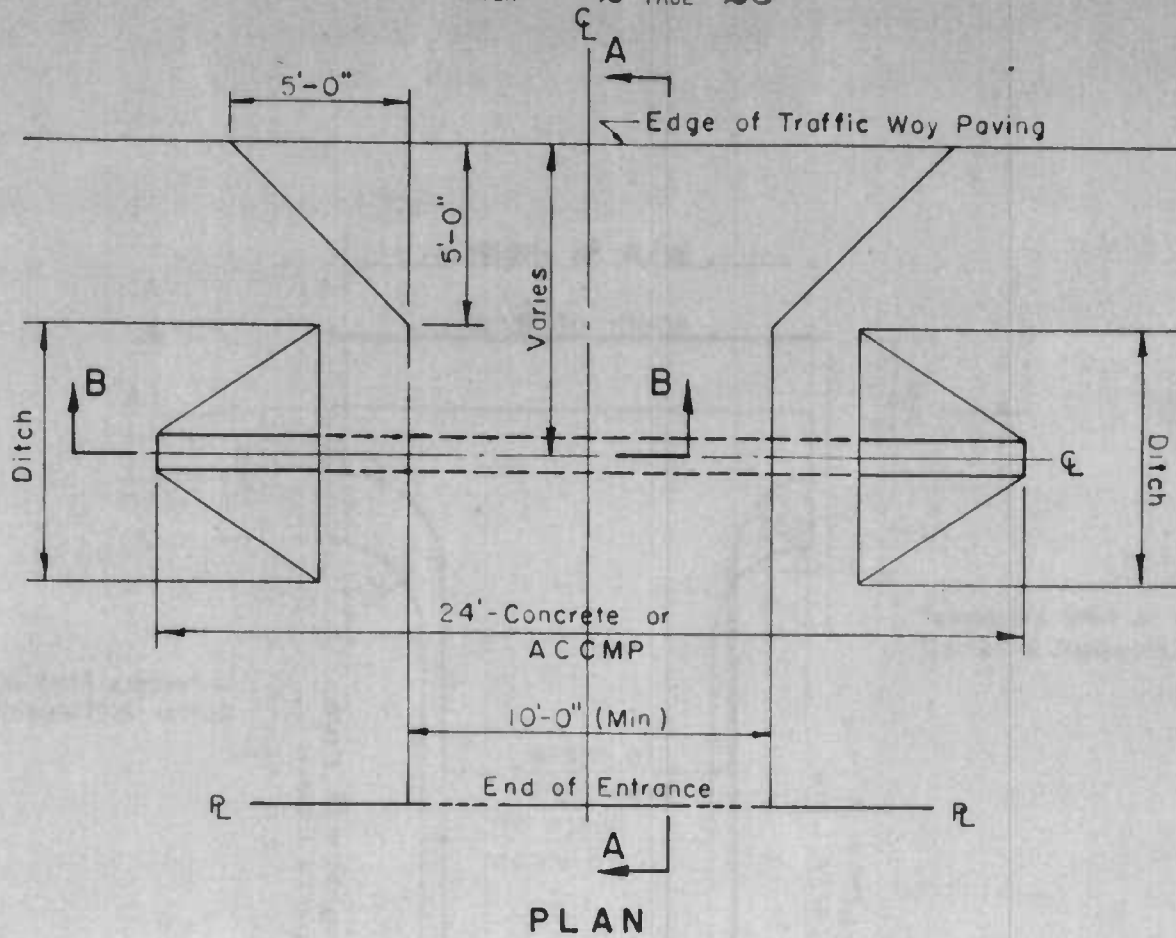
SECTION A-A



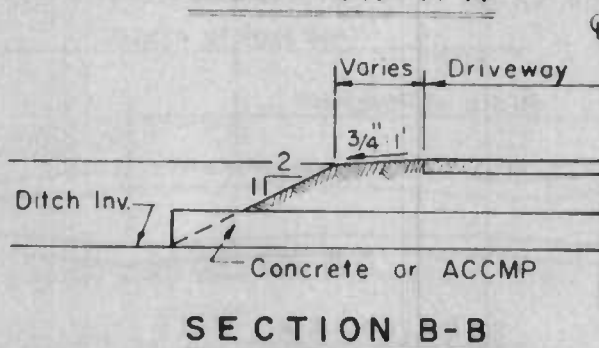
SECTION B-B

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>[Signature]</i> DIRECTOR	REVIEWED	STANDARD ROAD & STREET DETAILS TYPICAL DRIVEWAY ENTRANCE FROM ROAD WITHOUT CURB AND GUTTER	R-8
	<i>[Signature]</i> DIVISION OF ENGINEERING			
	DATE			
	1/1/66			

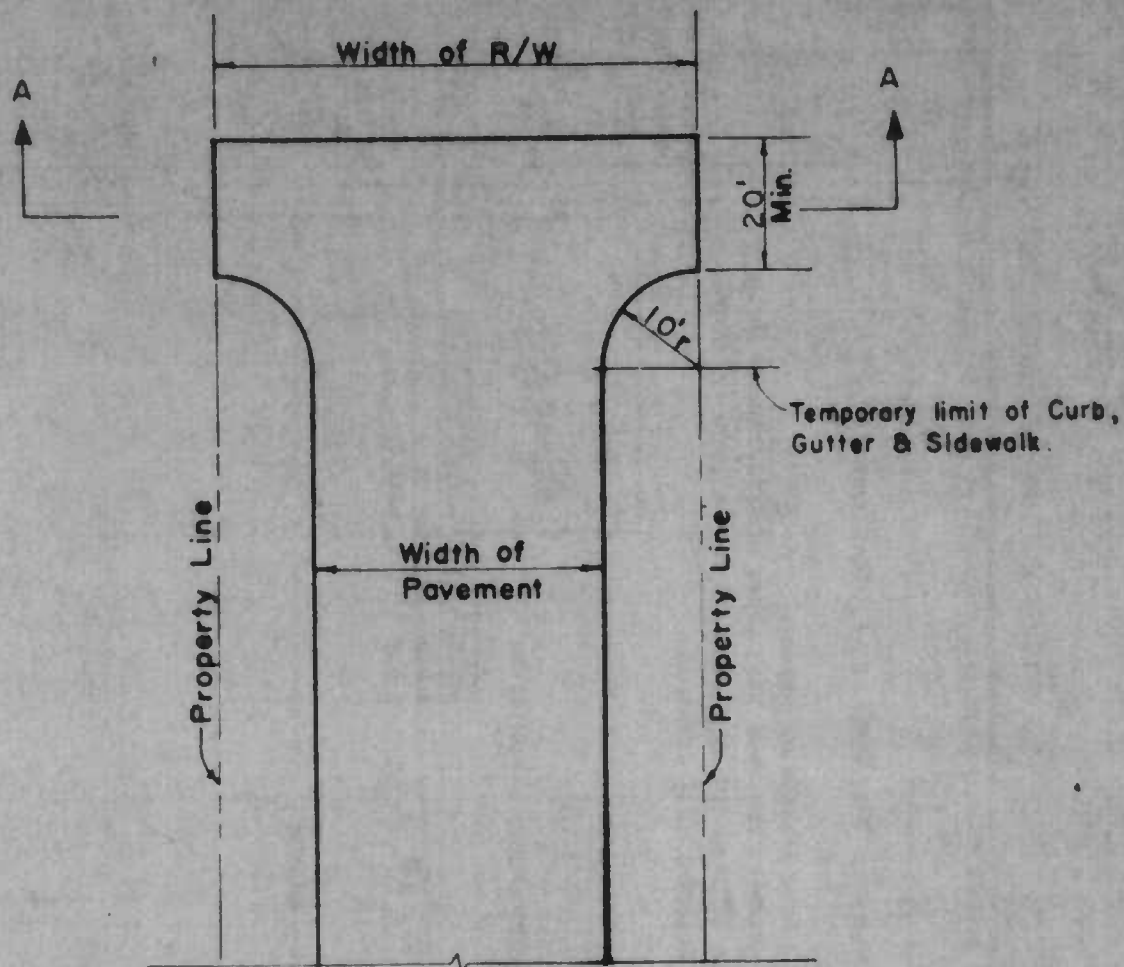


NOTE: For Driveway
Pavement Section,
See Detail R-7

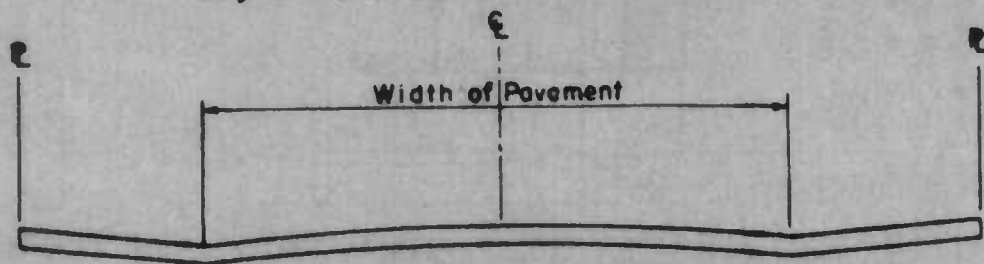


REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>P. J. [Signature]</i> DIRECTOR	REVIEWED	STANDARD ROAD & STREET DETAILS	
	<i>[Signature]</i> DIVISION OF ENGINEERING DATE		TYPICAL DRIVEWAY ENTRANCE FROM ROAD WITH DRAIN PIPE	R-9



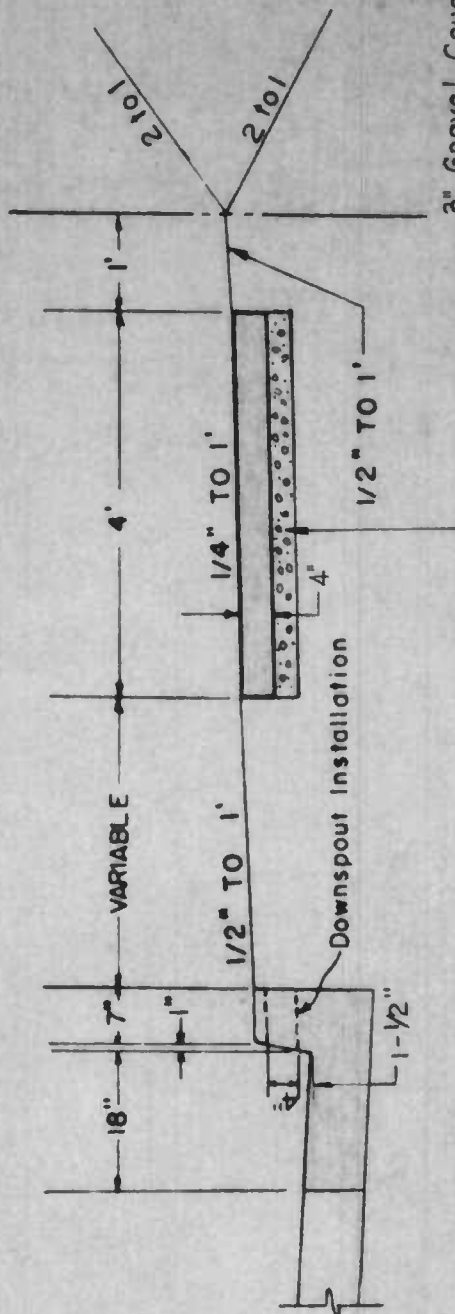
NOTE: A tee turn-around shall be used in lieu of a cul-de-sac only if the street is to be extended in the future.



SECTION A-A

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED, <i>[Signature]</i> DIRECTOR	REVIEWED	STANDARD ROAD & STREET DETAILS	
	<i>[Signature]</i> DIVISION OF ENGINEERING		TEE TURN-AROUND	
	DATE			
				R-10



Notes

- 1 Sidewalk to be scribed in 4' squares
- 2 Expansion joints across the sidewalk not more than 16' apart
- 3 1/2" Preformed Bituminous Expansion Joint Filler in expansion joints to be 1/4" wide, 1/4" below surface of sidewalk
- 4 Concrete to be 3000 psi
- 5 When Sidewalk abuts curb, walk shall be 1/4" above curb

3" Gravel, Crushed Stone or on other suitable material adequately compacted.*

REVISED	DATE	BY

* This requirement may be waived by written authority of Engr. if CBR of sub grd is 6% or above

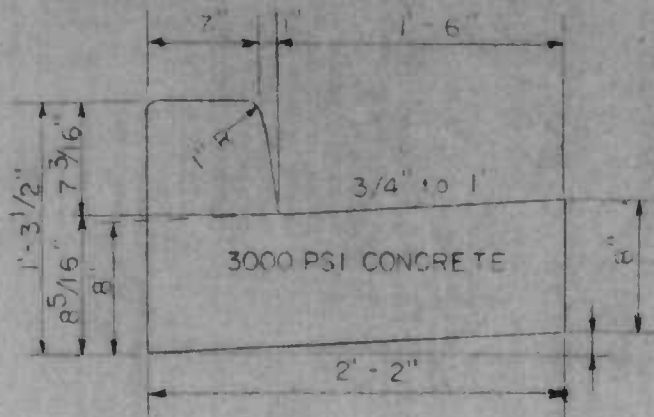
APPROVED
R. J. [Signature]
DIRECTOR
DIVISION OF ENGINEERING
DATE

STANDARD ROAD & STREET DETAILS

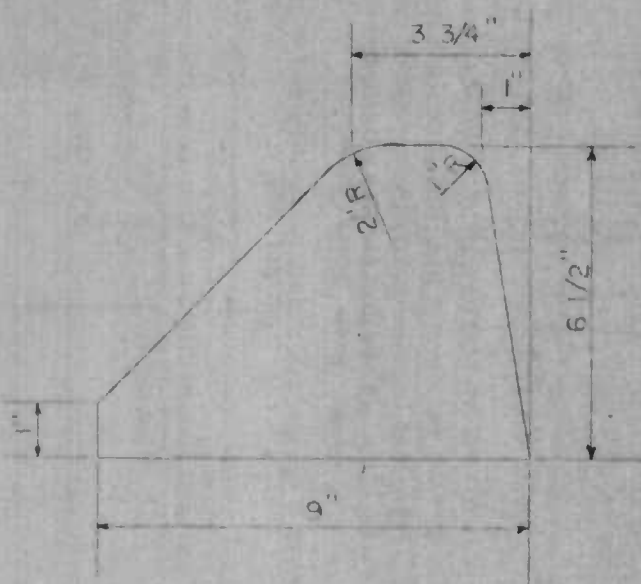
STANDARD 4' SIDEWALK

HARFORD
COUNTY
DEPARTMENT
OF
PUBLIC WORKS

R-11

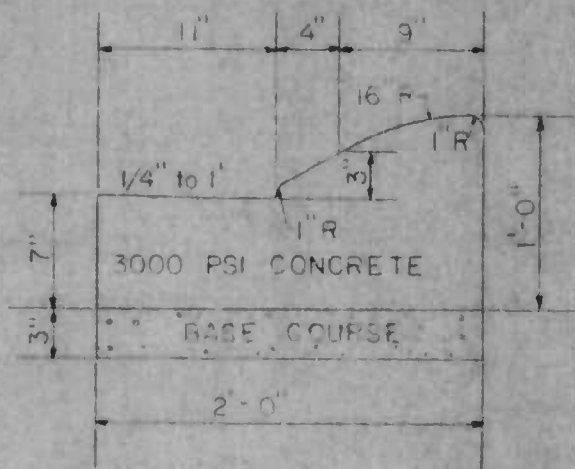


7" CURB AND GUTTER



SIMULTANEOUS CONCRETE

CURB

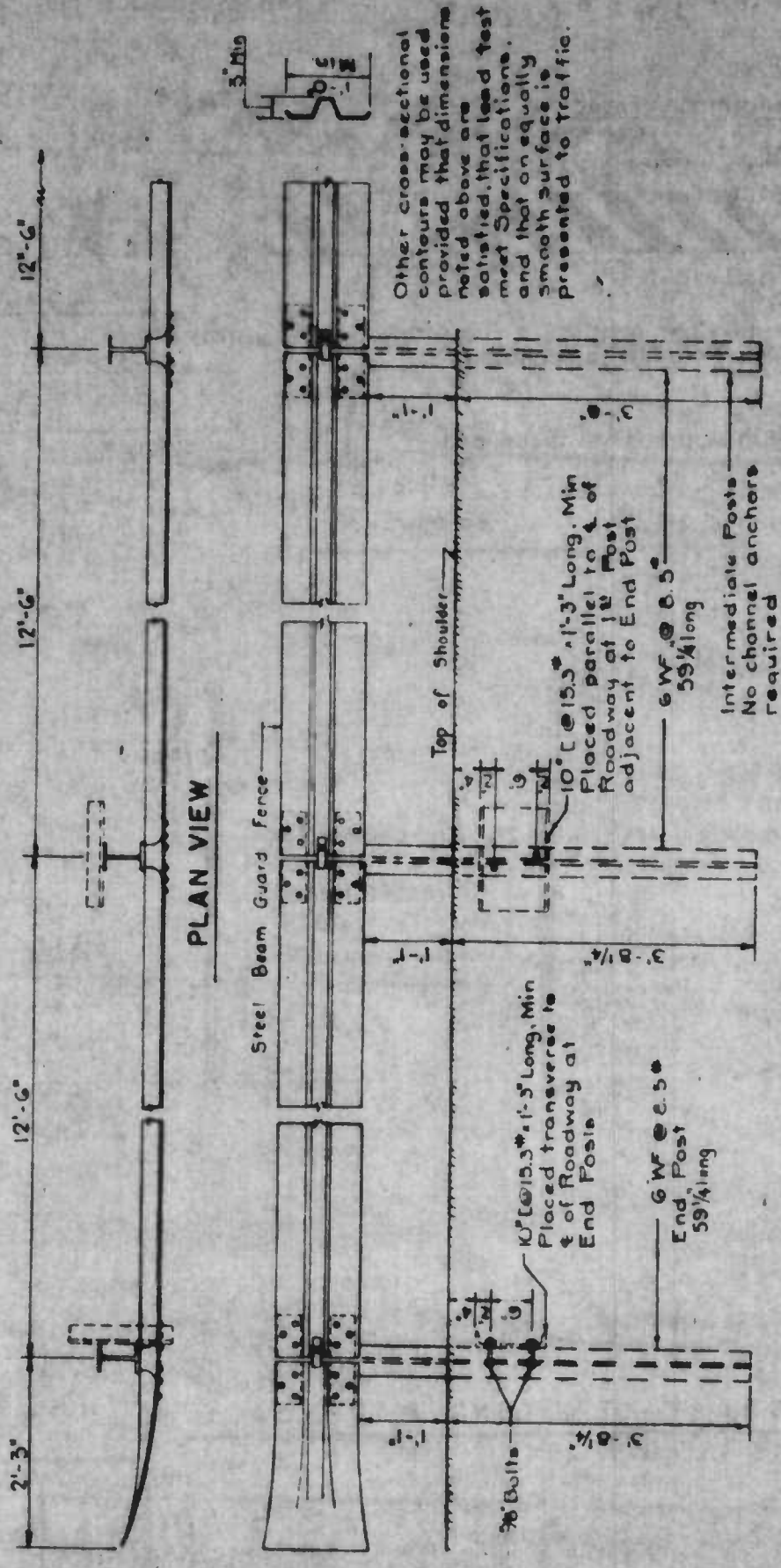


CONCRETE MOUNTABLE

CURB

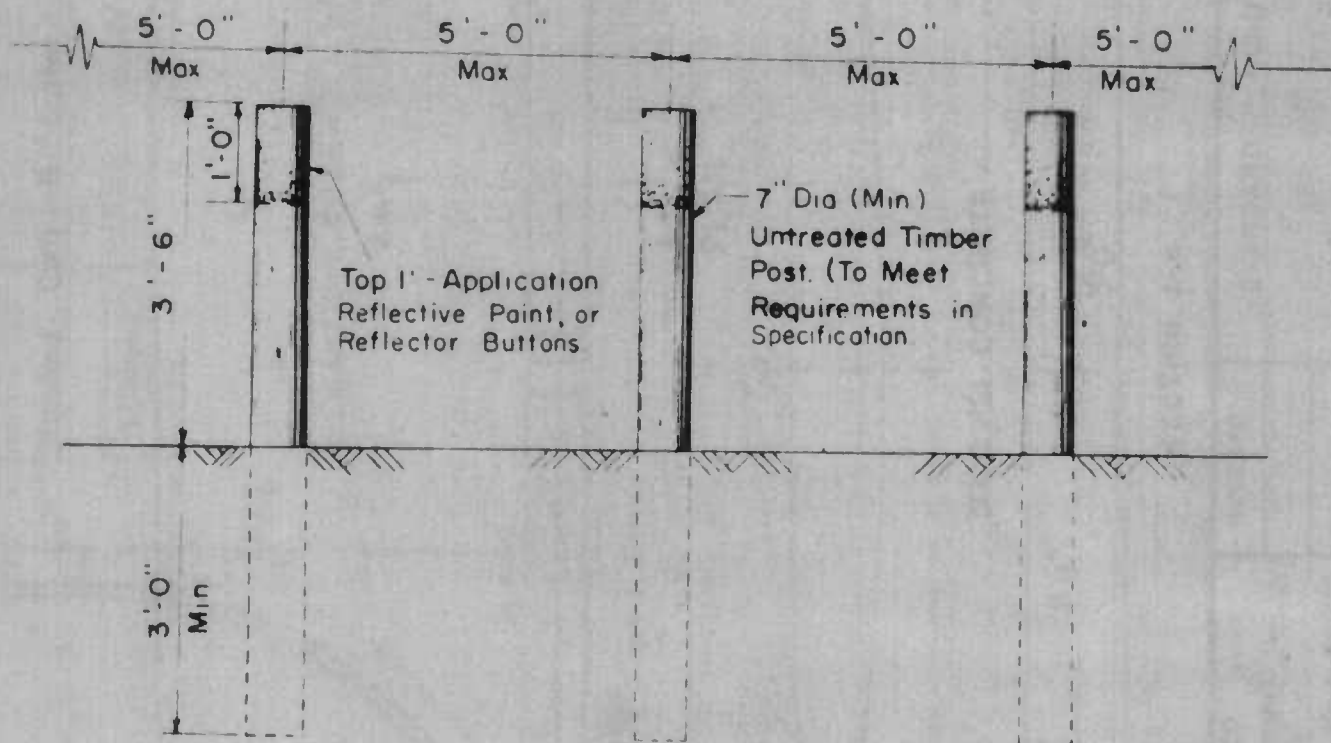
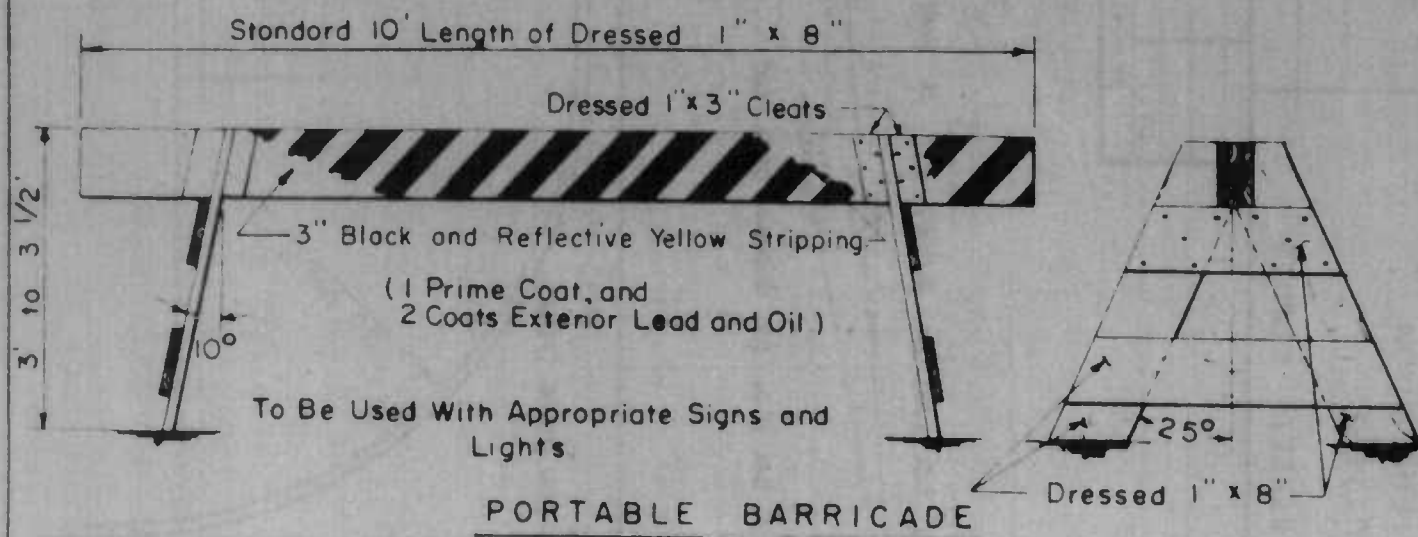
REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>D. J. Dwyer</i> DIRECTOR	REVIEWED	STANDARD ROAD & STREET DETAILS	
	<i>Harold Hamilton</i> DIVISION OF ENGINEERING		CURB DETAILS	
	11/1/66 --- DATE			
				R-12



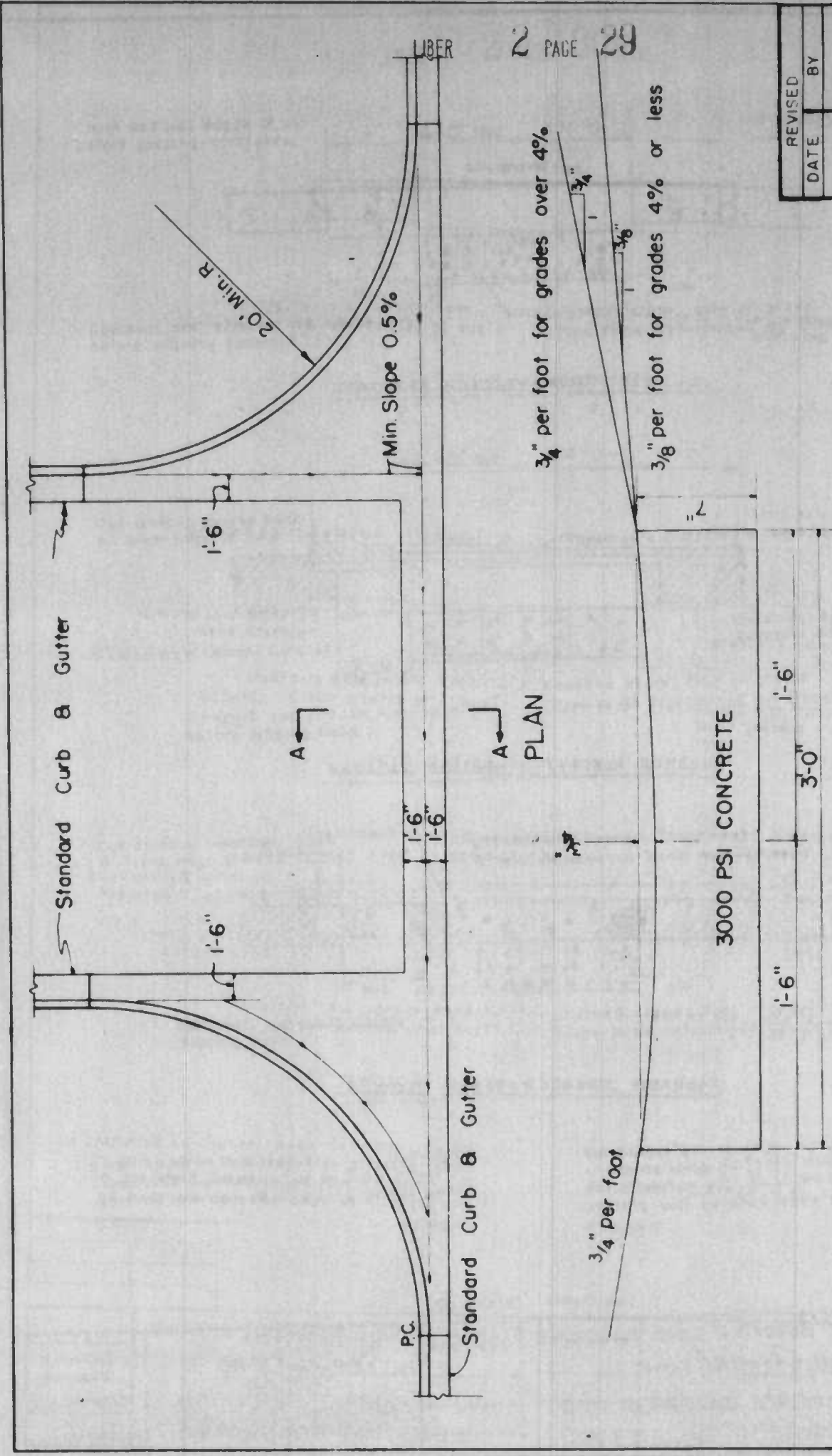
ELEVATION ASSEMBLY PLAN

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>[Signature]</i> DIRECTOR <i>[Signature]</i> DIVISION OF ENGINEERING DATE 11-1-66	REVIEWED	STANDARD ROAD & STREET DETAILS		R-13
			BEAM TYPE GUARD FENCE (12 GAUGE)		
REVISIONS					
DATE					
BY					



REVISED	
DATE	BY

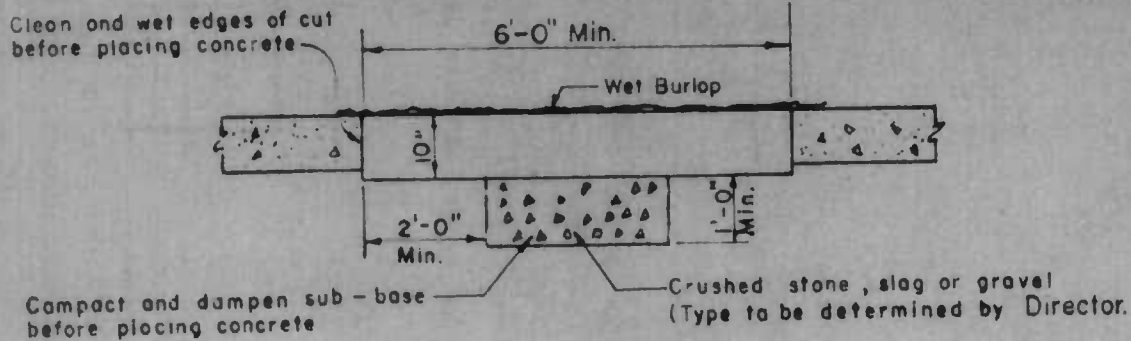
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. J. Fagg</i> DIRECTOR	REVIEWED	STANDARD ROAD & STREET DETAILS BARRICADES	R-14
	<i>Harold Hamilton</i> DIVISION OF ENGINEERING			
	DATE			



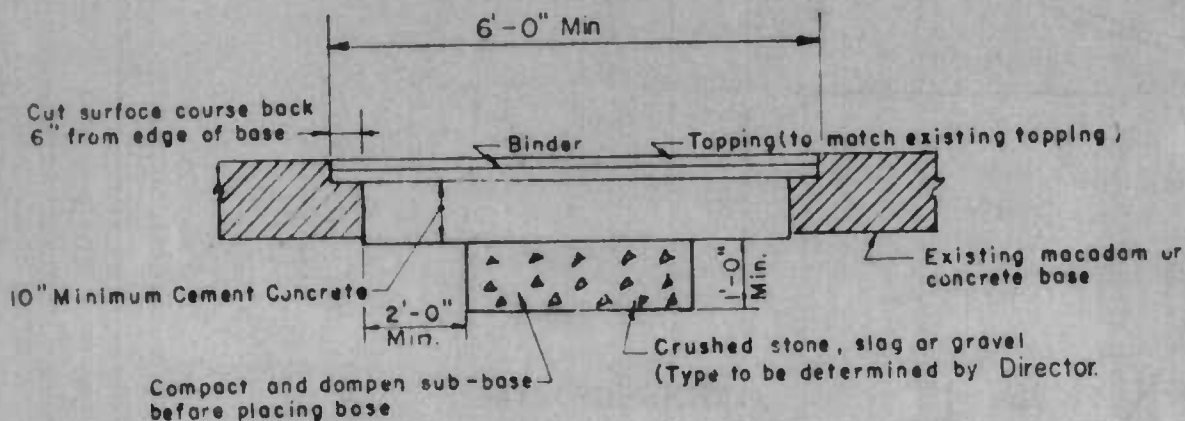
2 PAGE 29

REVISED	DATE	BY

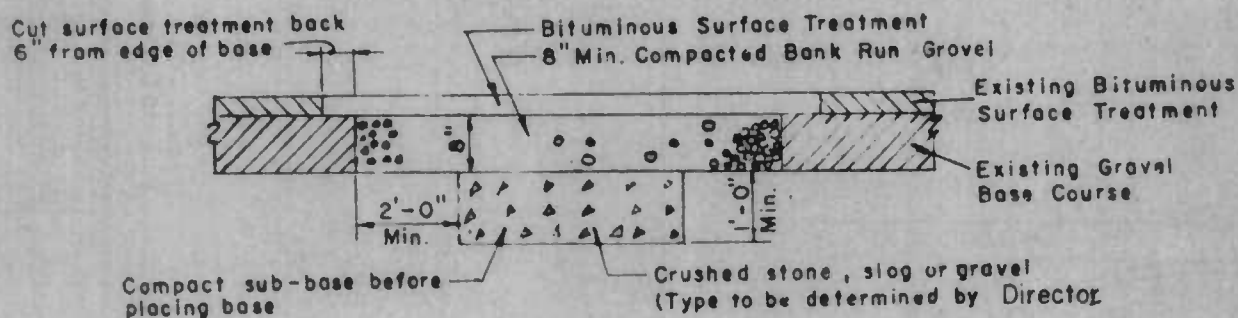
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED	REVIEWED	STANDARD	ROAD AND STREET	DETAILS
	<i>D. J. Gough</i> DIRECTOR			VALLEY GUTTER	
	DIVISION OF ENGINEERING		FOR 90° INTERSECTION		
	DATE				R-15



CONCRETE ROADWAY - RIGID TYPE



MACADAM ROADWAY - FLEXIBLE TYPE



SURFACE TREATED GRAVEL ROADWAY

Note: Backfill in trench shall be thoroughly compacted by tamping or by some other approved method in 6" layers before patch is made.

No excavation or cave-ins will be permitted under existing surfaces and no bellying of the trenches will be allowed. Sheeting or shoring will be used when so directed by Engineer.

REVISED	
DATE	BY

(No Scale)

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>R. J. [Signature]</i> DIRECTOR	REVIEWED	STANDARD ROAD & STREET DETAILS METHOD OF CUTTING AND REPAIRING OPENINGS IN EXISTING ROADWAYS	
	<i>Arnold & Hamilton</i> DIVISION OF ENGINEERING			
	DATE			
				R-16

PART II
HARFORD COUNTY
STANDARD SPECIFICATIONS

DIVISION A

GENERAL REQUIREMENTS

DIVISION A - GENERAL REQUIREMENTS

Article A-1 Definition of Terms
Section A-1.1

Article A-2 Scope of Work

- Section A-2.1 Intent of Plans, Specifications & Standards
- Section A-2.2 Removal & Disposal of Structures & Obstructions
- Section A-2.3 Final Cleaning Up

Article A-3 Control of the Work

- Section A-3.1 Authority of Engineer
- Section A-3.2 Plans and Work Drawings
- Section A-3.3 Co-operation of Permittee
- Section A-3.4 Authority and Duties of Inspectors
- Section A-3.5 Inspection
- Section A-3.6 Removal of Defective and Unauthorized Work

Article A-4 Control of Materials

- Section A-4.1 Source of Supply and Quality of Materials
- Section A-4.2 Storage of Materials
- Section A-4.3 Defective Materials

Article A-5 Legal Relations and Responsibility to the Public

- Section A-5.1 Laws to be Observed
- Section A-5.2 Permits and Licenses
- Section A-5.3 Sanitary Provisions
- Section A-5.4 Public Convenience and Safety
- Section A-5.5 Barricades, Danger, Warning and Detour Signs
- Section A-5.6 Use of Explosives
- Section A-5.7 Preservation and Restoration of Property, Trees, Monuments (etc.)
- Section A-5.8 Responsibility for Damage, Claims (etc.)
- Section A-5.9 Opening of Section of Highway to Traffic
- Section A-5.10 Permittee's Responsibility for Work

Article A-6 Prosecution and Progress

- Section A-6.1 Limitations of Operations
- Section A-6.2 Character of Workmen and Equipment
- Section A-6.3 Temporary Suspension of Work
- Section A-6.4 Termination of Permittee's Responsibility

DIVISION C - CONSTRUCTION DETAILS

PART I - Earthwork

Article C-1 Clearing and Grubbing

- Section C-1.11 Description
- Section C-1.12 Construction Methods

Article C-2 Roadway and Structure Excavation

- Section C-2.11 Description
- Section C-2.12 Materials
- Section C-2.13 Construction Methods

- Article C-3 Borrow Excavation
 - Section C-3.11 Description
 - Section C-3.12 Materials
 - Section C-3.13 Construction Methods
- Article C-4 Tamped Fill
 - Section C-4.11 Description
 - Section C-4.12 Construction Methods
- Article C-5 Earth Shoulders
 - Section C-5.11 Description
 - Section C-5.12 Construction Methods
- Article C-6 Trimming Existing Ditches
 - Section C-6.11 Description
 - Section C-6.12 Construction Methods
- Article C-7 Removal of Existing Pavement, Sidewalk, Curb,
and Combination Curb and Gutter
 - Section C-7.11 Description
 - Section C-7.12 Construction Methods
- Article C-8 Removal of Existing Masonry
 - Section C-8.11 Description
 - Section C-8.12 Construction Methods
- Article C-9 Removal of Existing Bridge Superstructure
 - Section C-9.11 Description
 - Section C-9.12 Construction Methods

DIVISION C

PART II - Base Courses

- Article C-21 Sub-base
 - Section C-21.21 Description
 - Section C-21.22 Materials
 - Section C-21.23 Preparation of Sub-grade
 - Section C-21.24 Construction Methods
- Article C-22 Stabilized Soil Base Course
 - Section C-22.21 Description
 - Section C-22.22 Materials
 - Section C-22.23 Construction Methods
- Article C-23 8" Gravel Base Course
 - Section C-23.21 Description
 - Section C-23.22 Composition of Mixture
 - Section C-23.23 Control of Mixtures
 - Section C-23.24 Determination of Suitability of Materials
 - Section C-23.25 Equipment
 - Section C-23.26 Preparation of Sub-grade
 - Section C-23.27 Construction Methods
 - Section C-23.28 Prime Coat for Gravel Base Course

Article C-24 Water Bound Macadam Base Course

Section C-24.21 Description

Section C-24.22 Materials

Section C-24.23 Preparation of Sub-grade

Section C-24.24 Construction Methods

Article C-25 Asphaltic Concrete Base Courses

Section C-25.21 Description

Section C-25.22 General Requirements

Section C-25.23 Paving Plant Requirement

Section C-25.24 Batch Mixing Plant

Section C-25.25 Plant Inspection

Section C-25.26 Preparation of Asphaltic Concrete Mixture

Section C-25.27 Transportation and Delivery of Mixture

Section C-25.28 Preparation of Sub-grade

Section C-25.29 Spreading and Finishing

Section C-25.30 Compaction

Section C-25.31 Joints

Section C-25.32 Seasonal and Weather Limitations

Section C-25.33 4" Asphaltic Concrete Base Course Type B
(Stone Mix)Section C-25.34 4" Asphaltic Concrete Base Course Type B
(Gravel Mix)

DIVISION C

PART II Surface Courses and Pavements

Article C-31 Penetration Macadam Surface Course

Section C-31.31 Description

Section C-31.32 Materials

Section C-31.33 Construction Methods

Article C-32 Hot-Mixed, Hot Laid, Asphaltic Concrete Pavement

Section C-32.31 Description

Section C-32.32 Materials

Section C-32.33 Mixing

Section C-32.34 Paving Plant Requirements

Section C-32.35 Plant Operation

Section C-32.36 Sampling and Testing

Section C-32.37 Transportation and Delivery of Mixtures

Section C-32.38 Spreading and Finishing

Section C-32.39 Compaction

Article C-33 Plain and Reinforced Portland Cement Concrete
Pavement

Section C-33.31 Description

Section C-33.32 Materials

Section C-33.33 Composition of Concrete Mixtures

Section C-33.34 Construction Methods

Article C-34 Bituminous Surface Treatment

Section C-34.31 Description

Section C-34.32 Materials

Section C-34.33 Construction Methods

DIVISION C

PART IV Structures

- Article C-41 Pipe Drains and Culverts
 - Section C-41.41 Description
 - Section C-41.42 Materials
 - Section C-41.43 General Requirements
 - Section C-41.44 Construction Methods
- Article C-42 Inlets and Manholes
 - Section C-42.41 Description
 - Section C-42.42 Materials
 - Section C-42.43 Construction Methods
- Article C-43 Concrete Structures
 - Section C-43.41 Description
 - Section C-43.42 Materials
 - Section C-43.43 Construction Methods

DIVISION C

PART V Miscellaneous and Incidental Construction

- Article C-51 Portland Cement Curbs, Gutters and Combination Curb and Gutter
 - Section C-51.51 Description
 - Section C-51.52 Materials
 - Section C-51.53 Construction Methods
- Article C-52 Concrete Sidewalk - One Course
 - Section C-52.51 Description
 - Section C-52.52 Materials
 - Section C-52.53 Construction Methods
- Article C-53 Rip Rap
 - Section C-53.51 Description
 - Section C-53.52 Materials
 - Section C-53.53 Construction Methods
- Article C-54 Sodding and Seeding
 - Section C-54.51 Description
 - Section C-54.52 Materials
 - Section C-54.53 Construction Methods
- Article C-55 Plain and Perforated Pipe Underdrains
 - Section C-55.51 Description
 - Section C-55.52 Materials
 - Section C-55.53 Construction Methods
- Article C-56 Patching Rigid Type Pavement
 - Section C-56.51 Description
 - Section C-56.52 Materials
 - Section C-56.53 Construction Methods
- Article C-57 Patching Flexible Type Pavement
 - Section C-57.51 Description
 - Section C-57.52 Materials
 - Section C-57.53 Construction Methods

Article C-58 Bituminous Concrete Curb
Section C-58.51 Description
Section C-58.52 Materials
Section C-58.53 Construction Methods

ARTICLE A-1 DEFINITION OF TERMS.

Section A-1.1.

Whenever used in these specifications, or in any documents or instruments involved in construction where these specifications govern, the following terms shall have the following meanings:

"County" - Harford County, Maryland

"County Commissioners" - The County Commissioners of Harford County, Maryland.

"Engineer" - The Director of the Department of Public Works of Harford County, Maryland, acting directly or through a duly authorized representative within the scope of the particular duties assigned to him.

"Inspector" - A representative of the Engineer authorized to make any or all necessary inspections of work performed and material furnished by the Contractor.

"Contractor" - The party of the second part to the Contract; the individual, partnership, firm or corporation undertaking the execution of the work under the terms of the Contract and acting directly or through his, their, or its agents or employees.

"Specifications" - The directions, provisions, and requirements contained herein pertaining to the method and manner of performing the work or to quantities and qualities of materials to be furnished.

"Standards" - The Harford County Design Standards, including instructions for submission of profiles and drainage structure design.

"Plans" - The drawings or reproductions thereof, pertaining to the construction of the improvement and its appurtenances.

"Road" - Including street, highway, avenue, lane, alley and viaduct, and the entire improvement including structures and appurtenances and the area within the limits of the public right-of-way.

"Superintendent" - Executive representative for the Contractor present on the work at all times during progress, authorized to receive and fulfill instructions from the Engineer and capable of superintending the work efficiently.

"Sub-grade" - That portion of the road-bed upon which the sub-base, the base courses, surface courses or pavement will be or have been placed.

"A.A.S.H.O." - The American Association of State Highway Officials.

"A.S.T.M." - The American Society for Testing Materials.

ARTICLE A-2 SCOPE OF WORK

Section A-2.1 Intent of Plans, specifications and standards.

The intent is to prescribe a complete work or improvement which the Contractor is to do in full compliance with the plans, specifications and standards. The Contractor shall perform

all items of work covered and stipulated in accordance with the lines, grades, cross-sections and dimensions shown on the plans. The Contractor shall furnish, unless otherwise provided, all materials, implements, machinery, equipment, tools, supplies, transportation and labor necessary to the prosecution and completion of the work.

Section A-2.2 Removal and disposal of structures and obstructions.

All structures, found on the highway which are not to remain in place or which have not been designated for use in the construction, shall remain the property of Harford County and shall be salvaged and stored or otherwise disposed of as hereinafter specified.

Section A-2.3 Final cleaning up.

Upon completion of the work and before acceptance shall be made, the Contractor shall clean and remove from the improvement and its approaches, footways, lawns and adjacent property, all surplus and discarded materials, falsework, rubbish and temporary structures and buildings, restore in an acceptable manner all property, both public and private, which has been damaged during the prosecution of the work, and shall leave the improvement and its approaches in a neat and presentable condition throughout the entire length of the improvement.

ARTICLE A-3 CONTROL OF THE WORK

Section A-3.1 Authority of Engineer.

To prevent misunderstanding, the Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of said work, and shall decide all questions which may arise as to the interpretation of any or all plans relating to the work and of the specifications, and all questions as to the acceptable fulfillment of the permit on the part of the Contractor. Any doubt as to the meaning of or any obscurity as to the wording of these specifications and standards, and all directions and explanations requisite or necessary to complete, explain or make definite any of the provisions of the specifications or standards and to give them due effect, will be interpreted or given by the Engineer.

Section A-3.2 Plans and work drawings.

1. The approved plans may be supplemented by such work drawings as are necessary to adequately control the work.

2. Plans will show details of all structures, lines, grades, typical cross section of roadway, general cross sections, location and designation of all units and elements.

3. The final limits of any and all earthwork, pavements, sidewalks, structures, or any other elements shall conform, in all cases, to the lines, grades, cross sections and dimensions shown on the plans and no deviations shall be per-

mitted other than allowed by tolerance indicated or authorized herein.

4. The crown or rise of the finished roadway of pavements or of bridge floors and the grade and slope of shoulders, whether constructed of earth or of other materials, shall be as shown on the typical cross section of the plans and within the authorized tolerances, except at intersecting roads or wherever, to insure proper drainage or for other reasons, changes may be directed.

Section A-3.3 Co-operation of Contractor.

The Contractor shall have available on the work, at all times, one copy each of the Plans and Specifications; he shall give the work the constant attention necessary to facilitate the progress thereof and shall cooperate with the Engineer. The Contractor shall at all times have a competent superintendent capable of reading and thoroughly understanding the Plans and Specifications, as his agent on the work, who shall receive instructions from the Engineer or his authorized representatives. The superintendent shall have full authority to execute the order of directions of the Engineer without delay and to promptly supply such materials, tools, plant equipment and labor as may be required.

Section A-3.4 Authority and duties of Inspectors.

Inspectors shall be authorized to inspect all work done and all material furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication or manufacture of the materials to be used. The Inspector is not authorized to revoke, alter or waive any requirements of the Contract, nor is he authorized to approve or accept any portion of the complete project. He is authorized to call the attention of the Contractor to any failure of the work or materials to conform to the Specifications and Contract. He shall have the authority to reject materials or suspend the work until any questions at issue can be referred to and decided by the Engineer. Inspectors shall perform their duties at such times and in such manner as will not unnecessarily impede progress on contract.

The Inspector shall in no case act as foreman or perform other duties for the Contractor, nor interfere with the management of the work by the latter. Any advice which the Inspector may give the Contractor shall not be construed as binding the Engineer in any way, or releasing the Contractor from fulfilling all of the terms of the Contract.

Where there is disagreement between the Contractor (or his representative) and the Inspector, such as, refusal by the Contractor to use properly approved materials; for performing work not in compliance with Plans and Specifications; and/or refusing to suspend work until problems at issue can be referred to and decided by the Engineer, the Inspector will immediately direct the Engineer's attention to the issues of disagreement and if the Contractor still refuses to make corrections, comply or suspend work, the Engineer will prepare and deliver in writing to the Contractor, by mail or otherwise, a written order suspending the work and explaining the reason for such shutdown. As

soon as the Inspector is advised of the delivery of the shutdown order, the Inspector shall immediately leave the site of the work and any work performed during the Inspector's absence will not be accepted or paid for.

Section A-3.5 Inspection.

The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether or not the work performed and materials used are in accordance with the requirements and intent of the Specifications. No work under this provision shall be done nor materials used without supervision or inspection by the Engineer or his representatives.

Section A-3.6 Removal of defective and unauthorized work.

Defective or unauthorized work shall be removed and disposed of immediately after rejection.

ARTICLE A-4 CONTROL OF MATERIAL

Section A-4.1 Source of supply and quality of materials.

1. The Engineer may require that the source of supply of each of the materials be approved in writing by him before the delivery is started. Only materials conforming to the requirements of these specifications and approved by the Engineer shall be used in the work. No materials, which after approval, have in any way become unfit for use, shall be used. Unless a material has a satisfactory record of performance, the Engineer may withhold approval of a new source of supply, until its qualities have been verified and proved in actual service.

2. Tests of all materials specified will be made by the Engineer in accordance with the latest official approved methods and described in "Standard Specifications for Highway Materials and Methods of Sampling and Testing" of the American Association of State Highway Officials. When A.S.T.M. Standard Specifications and Serial Numbers are stipulated, the reference shall be construed to be the latest effective Specifications of the American Society for Testing Materials.

3. The Contractor shall furnish every facility for the verification of all scales, measures, and other devices which he operates.

Section A-4.2 Storage of Materials.

Materials shall be stored so as to insure the preservation of their quality and fitness for the work.

Section A-4.3 Defective Materials.

All materials not conforming to the requirements of these Specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work, unless otherwise permitted by the Engineer. No rejected material, the defects of which having been subsequently corrected, shall be used until approval has been given.

ARTICLE A-5 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC.

Section A-5.1 Laws to be observed.

The Contractor shall be familiar with, and at all times shall observe and comply with, all Federal, State and local laws and by-laws, ordinances, and regulations in any manner affecting the conduct of the work, and shall indemnify and save harmless the County and its representatives against any claim arising from the violation of any such law, by-law, ordinance, or regulation, whether by the Contractor himself or by the Contractor's employees.

Section A-5.2 Permits and licenses.

Such permits, licenses, insurance policies, etc., as may be necessary in order to comply with Federal, State or local laws in conducting the work, shall be provided by the Contractor at his own expense.

Section A-5.3 Sanitary provisions.

The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the Harford County Department of Health or of other authorities having jurisdiction, and no public nuisance shall be committed.

Section A-5.4 Public convenience and safety.

The Contractor at all times shall conduct the work in such a manner as to ensure the least obstruction to traffic practicable. The convenience of the general public and of the residents along and adjacent to the improvement shall be provided for in an adequate and satisfactory manner. Material stored upon the roadway shall be placed so as to cause as little obstruction to the traveling public as is considered necessary. Fire hydrants on or adjacent to the roadway shall be kept accessible to fire apparatus at all times, and no material or obstruction shall be placed within five (5) feet of any such hydrant. All footways, gutters, sewer inlets and portions of highways adjoining the work under construction shall not be obstructed more than is absolutely necessary. Work closed down for the winter and at all other times shall be left entirely accessible at all points to fire apparatus.

Section A-5.5 Barricades, danger, warning and detour signs.

The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient red lights, danger signals and signs, provide a sufficient number of watchmen, and take all necessary precautions for the protection of the work and safety of the public. Roads closed to traffic shall be protected by effective barricades on which shall be placed acceptable warning signs. All barricades and obstructions shall be illuminated at night and all lights for this purpose shall be kept burning from sunset to sunrise. The Contractor shall provide

and maintain acceptable warning and detour signs at all closures and intersections.

Section A-5.6 Use of explosives.

The use of explosives will not be permitted adjacent to or on any existing structures unless authorized in writing by the Engineer. When the use of explosives is permitted, the Contractor shall use the utmost care, so as not to endanger life or property; and whenever necessary the number of charges and size of the charge shall be reduced. Expert powder men shall be required in the handling and use of explosives. All explosives shall be stored in a secure manner and all such storage places shall be marked clearly - "Dangerous--Explosives", and shall be in care of competent watchmen at all times. Explosives shall be stored and handled in conformity with the provisions of the Statutes of the State of Maryland.

Section A-5.7 Preservation and restoration of property, trees, monuments, etc.

1. The Contractor shall not enter upon private property for any purpose without obtaining permission and he shall be responsible for the preservation of all public and private property, trees, monuments, highway signs and markers, fences along and adjacent to the work, and shall use every precaution necessary to prevent damage or injury thereto. Any street signs or markers shall be carefully removed when grading operations begin, stored in a manner to keep them clean and dry and shall be re-erected at such new location as may be directed by the Engineer. He shall take suitable precaution to prevent damage to underground or overhead public utility structures and shall protect carefully from disturbances or damages all land monuments and property marks until the Engineer has witnessed or otherwise referenced their location, shall not remove them until directed, and shall replace them as directed by the Engineer.

2. The Contractor shall be responsible for all damage or injury to property of any character during the prosecution of the work, resulting from any act, omission, neglect or misconduct in his manner or method of executing said work satisfactorily, or due to his non-execution of said work, or at any time due to defective work or materials, and said responsibility shall not be released until the work shall have been completed and accepted. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work or in consequence of the non-execution thereof on the part of the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding or otherwise restoring as may be directed, or he shall make good such damage or injury, in an acceptable manner.

3. Special attention shall be given the landscape features of the work and special care taken to protect the natural surroundings. The Contractor shall not deface, injure

or destroy trees or shrubs nor remove or cut them without special authority. The roots of such trees or shrubbery will not be cut unnecessarily and no road machinery of any description, which might throw off gas or smoke in such volume as to damage vegetation shall be allowed to stand under such trees or shrubbery.

4. Selected trees that in the opinion of the Engineer may be defaced, bruised, injured or otherwise damaged by the Contractor's construction equipment or operations shall be protected by boards or planks.

5. Any timber, trees or landscape features scarred or damaged by the Contractor's operations shall be removed, neatly trimmed up, or restored as nearly as possible to the original condition, as required by the Engineer and at the Contractor's expense. All scars made on trees by construction operations or the removal of limbs shall be painted as soon as possible with an approved paint. No ropes, cables or guys are to be fastened to or attached to any existing nearby trees for anchorages, or in lieu of placing of dead men, unless specifically authorized by the Engineer, in which special emergency use the Contractor will first deliberately wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied, before any wire, cable or rope is placed. The Contractor shall in any event be responsible for any damage to any tree so used and shall repair any such damage due to this use of the tree if any occurs.

6. The Engineer may direct the Contractor to protect trees against blasting and dumping operations by placing lumber or poles around such trees. These precautions will be at the expense of the Contractor.

7. Where it is necessary to set or reset the curb along an existing sidewalk and the pavement is disturbed in doing so, it shall in all cases be restored by the removal of the damaged portions to a straight line parallel to the curb and the pavement replaced. Where necessary, in order to obtain a workmanlike finish, existing concrete pavement will be removed to the nearest joint back of the curb. If the existing pavement is a bituminous type, the area to be removed will be indicated by the Engineer. All sidewalk or pavement areas broken or cracked through carelessness or negligence on the part of the Contractor, shall be restored by the Contractor, in compliance with these Specifications.

Section A-5.8 Responsibility for damage claims, etc.

1. The Contractor shall indemnify and save harmless the County and all of its representatives from all suits, actions, or claims of any character brought on account of any injuries or damages sustained by any person or property in consequence of any neglect in safeguarding the work or through the use of unacceptable materials in the construction of the improvement, or on account of any act or omission by the said Contractor, or on account of the use, misuse, storage or handling of explosives, or on account of any claims or amounts recovered for any infringement or patent trademark, or copyright, or from any claims or amounts arising or recovered under the Workmen's Compensation Laws, or any other law, by-law, ordinance, order, or decree.

The Contractor shall be responsible for all damage or injury to property of any character during the prosecution of the work resulting from any act, omission, neglect, or misconduct, in the manner or method of executing said work satisfactorily or due to the non-execution of said work or at any time due to defective work or materials and said responsibility shall continue until the improvement shall have been completed and accepted.

2. The Contractor shall conduct his operations upon the right-of-way of any railroad company fully within the rules, regulations, and requirements of the railroad company. The Contractor shall be responsible for acquainting himself with such requirements as the railroad company may demand.

3. The Contractor shall be held responsible for any accidents that may happen to the railroad company due to any work performed within the limits of the railroad company's right-of-way.

Section A-5.9 Opening of section of highway to traffic.

At the option of the Engineer, certain sections of the work may be opened to traffic. In such cases, the completed section will be inspected, and tentatively accepted in writing. Such action shall not in any way be construed as final acceptance of the work, or any part of it, or as a waiver of any of the provisions of these specifications. Upon written authorization by the Engineer, the Contractor may open the road to traffic and cease to maintain barriers and red lights and the Contractor relieved from all further maintenance on that portion of the road.

Section A-5.10 Contractor's responsibility for work.

Until the final acceptance of the work by the Engineer as evidenced in writing, the Contractor shall have the charge and care thereof and shall take every necessary precaution against injury or damage to any part thereof by the action of the elements, from Contractor's equipment, or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before its completion and acceptance and shall bear the expense thereof. In case of suspension of work from any cause whatever, the Contractor shall be responsible for all materials and shall properly store them, if necessary, and shall provide suitable drainage of the roadway and erect temporary structures, where necessary.

ARTICLE A-6 PROSECUTION AND PROGRESS

Section A-6.1 Limitations of operations.

1. The Contractor shall begin work at such points as may be specified by the Engineer, as prescribed in the proposal and shall thereafter prosecute the work at such points and in such order as may be prescribed.

2. In the case of a dispute arising between two or

LIBER 2 PAGE 45

more Contractors engaged on the same work as to the respective rights of each under these specifications, the Engineer shall determine the matters at issue and shall define the respective rights of the various interests involved, in order to secure the completion of all parts of the work in general harmony and with satisfactory results, and his decision shall be final and binding on all parties concerned.

Section A-6.2 Character of workmen, methods and equipment.

The Contractor shall employ sufficient labor and equipment for prosecuting the several classes of work to full completion in the manner and time required by these Specifications.

Workmen must have sufficient skill and experience to perform properly the work assigned to them. All workmen engaged in special work or skilled work, shall have sufficient experience in such work and in the operation of the equipment required to perform all work properly and satisfactorily.

Equipment to be used on the work shall meet the requirements of the work and produce a satisfactory quality of work. The Engineer may order the removal and require replacement of any unsatisfactory equipment.

Any foreman or workman employed by the Contractor or by any Subcontractor who does not perform his work in a proper manner or is intemperate or disorderly shall be removed forthwith by the Contractor or Subcontractor employing such foreman or workman, and shall not be employed again in any portion of the work without the approval of the Engineer.

Should the Contractor fail to remove such person or persons as required above, or fail to furnish suitable and sufficient personnel for the proper prosecution of the work, the Engineer may withhold estimates which are or may become due on the Contract until a satisfactory understanding has been reached.

Section A-6.3 Temporary suspension of work.

The Engineer shall have the authority to suspend the work, wholly or in part, for such period or periods as he may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as is necessary due to failure on the part of the Contractor to carry out orders given or to perform any or all provisions of the permit. If it should become necessary to stop work for an indefinite period, the Contractor shall store all materials in such manner that they will not obstruct or impede the traveling public unnecessarily nor become damaged in any way, and he shall take every precaution to prevent damage or deterioration of the work performed, provide suitable drainage by opening ditches, shoulder drains, etc., and erect temporary structures where necessary. The Contractor shall not suspend the work without written authority and shall resume work after such suspensions upon written notice from the Engineer.

Section A-6.4 Termination of Contractor's responsibility.

Upon satisfactory completion of work the Engineer will make a final inspection and recommend acceptance of the work to the County Commissioners. After the recommendation of the Engineer

is approved by the County Commissioners, the Engineer will promptly notify the Contractor that final inspection of the work has been made, and that the work has been satisfactorily completed. The Contractor will be relieved of any further work, including maintenance, within the limits of the improvement for which he obtained a permit.

DIVISION C
CONSTRUCTION DETAILS

PART I
EARTHWORK

ARTICLE C-1 CLEARING AND GRUBBING

Section C-1.11 Description.

1. This item shall consist of clearing and grubbing the areas designated in accordance with the requirements of these specifications in conformity with the plans and standards and within the limits as defined hereunder.

2. Clearing is defined as the clearing of the ground area of all trees, brush, shrubs, down timber, rotten wood, rubbish and any other objectionable debris; also the removal of fences and incidental structures.

3. Grubbing is defined as removing from the ground all stumps, roots and stubs brush, organic materials, and debris.

4. Grubbing as defined herein shall be confined to the limits of excavation which will include the grading of the roadway, side ditch areas, or areas designated for inlets and outlets to waterways or for stream or channel changes. Clearing as defined herein shall include the limits of construction and the entire right-of-way inclusive of easement areas.

5. All materials removed from the ground or ground surfaces in accordance with these requirements shall be burned, salvaged, or disposed of out of sight from the road.

Section C-1.12 Construction methods.

1. If so directed by the Engineer, all fences within the right-of-way shall be removed without damage and placed on the abutting properties.

2. Grading operations shall not be started in the area as defined in the following provisions until all the operations of clearing and grubbing within the area affected have been completed, except that stumps shall be removed in excavation areas during the grading operations.

3. Within areas where excavation is to be made, the ground shall be cleared of all living or dead trees, stumps, brush, or other objectionable vegetations. All imbedded stumps, root mats, etc., shall be removed to a depth of not less than one (1) foot below the sub-grade or slope surfaces. All depressions made below the sub-grade of slope surfaces by the removal of stumps or roots shall be refilled with materials suitable for embankment and shall be compacted in conformity with the requirements for "Embankment."

4. Within areas where embankment is to be made three (3) feet or more in depth, trees and stumps shall be cut off as close to the ground as is practicable, but not to exceed twelve (12) inches above the ground surface. Near the toe of embankment slopes, none of the stumps or trees shall extend above a point one (1) foot beneath the slope surfaces.

5. Within areas where embankment is to be made less than three (3) feet in depth, all trees, stumps, roots, brush, matted roots and debris shall be removed, grubbed or blasted from the ground, and all of these materials in the event that the embankment is less than two (2) feet or less in depth, shall be grubbed in a manner required where excavation is to be made.

6. All other areas within the right-of-way and easement areas shall be cleared flush to the ground surface of all dead trees, stumps, brush or other objectionable vegetation. In addition, such live trees as may interfere with the sight distances either vertically or horizontally shall be cleared from these areas.

7. Areas within which stream or channel changes are to be made shall be cleared and grubbed in accordance with the provisions of Paragraph 3 of this Section. In addition, clearing in accordance with Paragraph 6 of this Section shall extend three (3) feet beyond the top of the cut slopes of the completed channel change.

ARTICLE C-2 , ROADWAY AND STRUCTURE EXCAVATION

Section C-2.11 Description.

1. Roadway and structure excavation shall consist in general of the excavation for structures and the excavation and grading for roadways and their appurtenances to true lines and grades in conformity with the plans. Unsuitable and excess materials removed in any excavation shall be disposed of by being removed from the limits of the work to such location as shall be approved by the Engineer.

2. Structure excavation shall consist of excavation for bridges, drainage structures, retaining walls, buildings, etc. All suitable materials removed in the excavation may be used in the backfill for structures or in approach embankments.

Section C-2.12 Materials

1. All materials within the limits of the highway that are to be incorporated in the work shall be subject to test by the Engineer to determine their suitability for the portions of the work in which they are to be placed. Such tests may consist of chemical or physical analysis to determine organic content, mechanical properties, bearing capacity, density, stability or any other properties pertinent to the satisfactory completion of the work as proposed.

2. Materials for Embankments shall meet the requirements of Section C-2.13.

Section C-2.13 Construction Methods.

1. Roadway Excavations:

(a) During the construction of the roadway, the road bed shall be maintained in such condition that it will be well drained at all times.

(b) Any boulders or excavated rock too large to be placed in the embankment shall be broken up or disposed of without creating any unsightly condition adjacent to the roadway. Any rock or ledge encountered in the roadbed excavation shall be removed to a depth of nine (9) inches below the proposed subgrade surface for the full width of the roadbed between gutter lines and such areas

LIBER 2 PAGE 51
backfilled as hereinafter required.

(c) Where the excavation is rock, material suitable for subgrade, if required shall be obtained by borrow excavation.

(d) Material deposited in any stream channel, by the Contractor which in any way whatsoever obstructs or impairs the flow of the stream, thus endangering the roadway or stream bank, shall be removed as directed by the Engineer.

(e) All earth slopes shall be finished to neat regular lines conforming to the typical section. The work shall be done in proper sequence with all other operations involved.

(f) All drainage facilities shall be installed which will permit the free and uninterrupted flow of the surface and underground water before any surfacing is placed. When side and outlet ditches provide the principal means for drainage, the cutting of such ditches for the disposition of surface water will be the first step in the grading operation.

2. Structure Excavation: The natural ground adjacent to the structure shall not be disturbed without permission from the Engineer. No excavated material shall be deposited at any time so as to endanger the partly finished structure, either by direct pressure or indirectly by overloading banks contiguous to the operation, or by any other manner. Trenches or foundation pits for structure of structure footings shall be excavated to the lines and grades or elevations shown on the plans or as staked by the Engineer. They shall be of sufficient size to permit the placing of the full width and length of structure or structure footings shown.

3. Boulders, logs, or any other unforeseen obstacles encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface, either level, stepped, or serrated, as directed by the Engineer. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. When masonry is to rest on an excavated surface other than rock, special care shall be taken not to disturb the bottom of the excavation and the final removal of the foundation material to grade shall not be made until just before the masonry is to be placed. After each excavation is completed, the Contractor shall notify the Engineer, and no masonry shall be placed or foundation piles driven until after the Engineer has approved the depth of the excavation and the character of the foundation material.

4. Backfill:

(a) All excavated spaces resulting from structure excavation, not occupied by portions of the permanent work shall be refilled with approved material. This refilling shall be carried to the surface of the surrounding ground or grades of the proposed improvement as shown on the plans. The top surface of the refilled areas shall be neatly graded.

(b) Backfilling and refilling against various

structures may be done at the following times:

(c) Dry Rubble Masonry. Backfilling and refilling may be coincident with the building of the structure.

(d) Class A Cement Rubble and Brick Masonry. Between April 15 and November 15, backfilling and refilling may be done seven (7) days after completion of the section; at other periods backfilling and refilling may be done fourteen (14) days after completion of the section.

(e) Cement Concrete Structures. On gravity sections with a base width approximately 0.5 of its height, backfilling and refilling may be done after all the provisions for curing the concrete, etc., have been complied with. On reinforced sections (any section not falling in the above classification) backfilling and refilling may be done after all the provisions for curing the concrete, etc., have been complied with and when compression test specimens indicate that the concrete has attained a minimum compressive strength of 300#/sq. in.

(f) Backfilling against pipe structures which joints are made with cement mortar shall not be done until the mortar is twelve (12) hours old.

(g) In the case where refilling may be made equally on each side of a single wall or part of a structure without producing stress in that section, refilling may be done after all the provisions for curing the concrete, etc., have been complied with.

(h) Fill placed around culverts and piers shall be deposited on both sides to approximately the same elevation at the same time. All filling adjacent to structures shall be deposited in horizontal layers and compacted as prescribed under "Tamped Fill." Special care shall be taken to prevent any wedging action against the structure and all slopes bounding or within the areas to be backfilled shall be stepped or serrated to prevent such wedge action.

(i) In backfilling abutments, retaining walls or other structures, the bed for the backfill shall be so prepared and serrated and the backfill shall be so built up in horizontal layers that at all times there shall be a horizontal berm of uniformly compacted material behind the structure for a distance at least equal to the height of the abutment or wall to be backfilled except insofar as undisturbed material protrudes into this area. Each layer of this berm, if dry, shall be moistened and then compacted by tamping with mechanical tampers.

(j) By mechanical tamper is meant equipment designed to tamp the relatively thin layers herein prescribed under the item "Tamped Fill." The use of drop pile hammers, loaded or unloaded clam shell or other similar unsuitable equipment for this purpose is prohibited within the berm area mentioned above as well as the dropping of any heavy weight for that purpose more than ten (10) feet. Jetting of fills, or other hydraulic methods involving or likely to involve

liquid or semiliquid pressure within this berm area, is prohibited.

5. (a) Embankments shall be formed of suitable materials, placed in successive horizontal layers of not more than eight (8) inches in loose depth for the full width of the cross section of the road. Each layer shall be uniformly and fully compacted with a sheeps foot or tamping type roller. The weight of the roller shall be such that the load on the row of tamping feet in the contact with the embankment shall not be less than two hundred (200) pounds per square inch of tamping-foot area; the roller to be operated over each layer until no further compaction is obtained, and which will be evidenced by the ability of the tamping feet to ride the compacted surface before the succeeding layer of loose material is spread. If the character of soil is such that the sheeps foot roller would not produce the desired results, such as a soil containing considerable rock, a power roller, tandem or three-wheel, weighing not less than ten (10) tons, shall be used to cover the entire area with a sufficient number of trips to satisfy the requirements of the Engineer.

Where the material of which the embankment is constructed is of a sandy nature, so that it is impracticable to compact it with sheeps foot or power rollers, it may be rolled with a ten-ton pneumatic tired tractor or a pneumatic tired roller. The tracks or treads of the tractor or rollers shall by successive rolling cover the entire surface of each layer.

If in the judgment of the Engineer, sprinkling will facilitate the compaction of soils of this character or soils which have become powdered because of dry weather and continuous hauling, the water shall be applied under the direction of the Engineer, and in conjunction with and incident to the rolling.

The moisture content of the soil being compacted shall be considered as being too high to insure compaction when, after repeated rollings with a sheeps foot roller, the roller continues to pick up excessive amounts of soil and refuses to "build up" so that the tamping feet eventually ride the compacted surface. When other types of rollers are used, the moisture content of the soil shall be considered as excessive when bridging or building up of the soil across, in front of, or behind the roller wheels of such rollers, and/or when the earth hauling equipment produces ruts in the rolled surface.

Material containing an excess of water shall be permitted to dry to a moisture content which will allow acceptable compaction. Where rock is being used in the embankment, it shall be carefully distributed and the interstices filled with a finer material to form a dense, compact mass. When embankments are to be made on a hillside, the slopes of the original ground on which the embankment is to be placed shall be plowed deeply or cut into steps before filling

operations are started. In the construction of embankments, no frozen material shall be used and no layer of earth shall be placed on the frozen surface of a preceding layer.

(b) Embankments made of material taken from rock excavation shall be formed by placing the rock in approximately level layers of substantially uniform thickness. The thickness of the layers shall be determined by the size of the rock taken from the excavation and shall not exceed eight (8) inches for the upper six (6) feet of any embankment and shall not exceed twenty-four (24) inches for portions of an embankment more than six (6) feet below the proposed sub-grade. The upper six (6) feet of any rock fill shall be filled solid so as to eliminate all voids, using spalls, rock dust or earth for that purpose and shall be compacted, layer by layer, by means of a ten ton power roller, and the void filling and compaction of each layer shall be completed before the next layer is placed. The top of the rock fill shall be a uniform surface at least nine (9) inches below the elevation of the proposed subgrade for the full width of the embankment section. The remaining embankment, including the portion immediately below the subgrade and the shoulder section, shall consist of suitable earth, free from stones that would be retained on a sieve with three (3) inch square openings, and shall be compacted as specified herein.

(c) Where embankment is to be constructed across low swampy ground, open water, or areas liquefied by dynamite, or otherwise, which will not support the weight of trucks or other hauling equipment, the first layer of the fill shall be constructed by dumping successive truck loads, in a uniformly distributed layer of a thickness not greater than necessary to support the trucks while placing subsequent layers and in conformity with the requirements of the plans. The upper portions of the fills shall be constructed in layers as otherwise specified.

(d) When embankment is to be superimposed upon any type of existing roads, the existing surface shall, regardless of depth of embankment to be placed thereon, be scarified, thoroughly broken up, or removed as indicated on the plans, to such degree as will provide ample bond between old and new material.

(e) The Contractor shall be responsible for the stability of all embankments made. He shall remove and replace with suitable material any fill or portion of a fill which has been built up with an unapproved material or which cannot be compacted and made stable. Embankments over and around culverts, arches and bridges shall be of selected materials placed and thoroughly tamped and compacted so as to avoid undue strain on the structure as prescribed by the specifications for the several types of structures and as further prescribed under "Tamped Fill." In all cases proper precautions shall be taken to assure that the method of operation does not cause movement or undue strain on any structure.

(f) The characteristics of soil and its use are outlined in the specifications of the A.A.S.H.O., Designation M-57. These requirements will be applicable for use in all types of embankment construction and will govern in the determination of proper fill compaction. The methods for testing materials in conformity therewith shall be in accordance with the requirements of the A.A.S.H.O., Designation T-99*. Any fill, or portion of a fill, that does not have the prescribed density, as set forth in the following table, shall be compacted as hereinbefore specified until the desired density is obtained.

EMBANKMENT SOIL COMPACTION REQUIREMENTS

Condition I

Fills 10' or less in height
and not subject to extensive
floods

Condition II

Fills exceeding 10' in height,
or subject to long periods of
flooding

	Minimum Field Compaction Requirements (Percent of <u>Dry Weight</u>)	Maximum Laboratory Dry Weight* (Pounds per cu.ft.)	Minimum Field Compaction Requirements (Percent of <u>Dry Weight</u>)
Maximum Laboratory Dry Weight* (Pounds per cu.ft.)			
88.9 and less	**	94.9 and less	***
90.0 - 99.9	100	95.0 - 99.9	100.00
100.0 - 109.9	95	100.0 - 109.9	100.00
110.0 - 119.9	95	110.0 - 119.9	98.0
120.0 - 129.9	90	120.0 - 129.9	95.0
130.0 and more	90	130.0 and more	95.0

**Soils having maximum dry weights of less than 90 pounds per cubic foot will be considered unsatisfactory and shall not be used in embankment.

***Soils having maximum dry weights of less than 95 pounds per cubic foot will be considered unsatisfactory and shall not be used in embankment under Condition II requirements.

6. (a) The subgrade shall be constructed after the earthwork in excavation and embankment has been substantially completed and the adjacent drains have been completed and back-filled. The earth used for the top nine (9) inches on fills built up substantially from rock excavation, as required under Paragraph 4 (b) of this Section for the preparation of the subgrade, shall be furnished and placed by the Contractor. All boulders or ledges appearing in the earth excavation shall be removed or broken off to a depth of not less than nine (9) inches below the finished subgrade and the resulting depressions shall be brought to grade in conformity with the following requirements. All soft and unstable material and other portions

of the subgrade which will not compact readily or serve the purpose intended shall be removed and disposed of as hereinbefore specified. The resulting areas and all other low sections, holes or depressions shall be brought to profile grade and cross section with satisfactory material and the entire subgrade shall be scarified as directed, compacted and shaped to line, grade and cross section. Satisfactory material shall be used, supplemented as necessary by additional suitable material.

(b) The compaction of materials for the fine grading of subgrade shall be obtained with a power roller, tandem or three wheel, weighing not less than ten (10) tons. The rolling shall cover the entire area of the subgrade and in case concrete surfacing is to be constructed, the rolling shall extend one (1) foot outside the paved area. Any portion of the subgrade, which is not accessible to a roller shall be compacted in the manner required under "Tamped Fill."

(c) Ditches and drains along the subgrade shall be maintained so as to effectively drain the subgrade at all times.

(d) In handling materials, tools, equipment, etc., the Contractor shall protect the subgrade from damage by laying planks thereon when directed, and shall take such other precautions as may be deemed necessary. In no case shall vehicles be allowed to travel in a single track and form ruts. If ruts of two inches or more in depth are formed, the subgrade shall be scarified, reshaped, and rolled. No foundations or surfacing material shall be deposited on a frozen subgrade.

7. (a) The widening of cut or excavation sections beyond the limits of the typical cross section as shown on the plans is prohibited in all instances except by written order from the Engineer.

(b) The widening of cuts or excavation sections shall be completed so that completed flat and slope areas shall be uniform in appearance; the slopes shall be no steeper than the cut slopes indicated on the plans and shall be parallel to the center line of the road at all points.

ARTICLE C-3 BORROW EXCAVATION

Section C-3.11 Description.

This item shall consist of furnishing, excavating and depositing of approved materials for embankments and backfills as directed, when sufficient quantities of suitable materials are not available from other excavation, and shall include all work prescribed for backfills, embankment, subgrade, and earth shoulders. It shall include necessary clearing and grubbing, the removal and disposal of overburden or other unsuitable spoil material.

Section C-3.12 Materials.

All materials used in this construction shall conform to all of the requirements of Section C-2.13 of these specifications.

Section C-3.13 Construction Methods.

1. Clearing and grubbing shall be performed in accordance with the provision of Article C-1 of these specifications.
2. The Contractor shall notify the Engineer ten (10) days in advance of the opening of any borrow pit so that soil analyses may be made.

ARTICLE C-4 TAMPED FILL

Section C-4.11 Description.

Tamped Fill shall consist of compacting backfills for structures, including culverts, substructure units, headwalls, retaining walls, inlets, basins and manholes in accordance with these specifications and in conformity with the lines, grades and cross section shown on the plans.

Section C-4.12 Construction Methods.

1. After the substructure unit, headwall, retaining walls, inlet basin, manhole, pipe or box culvert has been completed and permission has been given by the Engineer to backfill, the areas adjacent to the structure shall be filled with materials furnished from roadway or structure excavation supplemented by additional suitable material, if directed, from borrow excavation.

The materials shall be placed in horizontal layers not over six (6) inches in depth over the entire area to be backfilled, and shall be uniformly compacted by means of mechanical tampers to conform with the requirements of Paragraph 4 (f) under Section C-2.13. If the material is too dry for proper compaction, it shall be moistened as directed.

2. Mechanical tampers shall be capable of exerting a blow equal to 250 foot-pounds per square foot of area to the tamping face.

3. In backfilling abutments, retaining walls or other structures, the bed for the backfill shall be so prepared and serrated, and the backfill shall be so built up in horizontal layers that at all times, there shall be a horizontal berm of thoroughly compacted material behind the structure for a distance at least equal to the remaining height of the abutment or wall to be backfilled, except insofar as undisturbed material protrudes into this area, and in the case of structures installed below subgrade in embankments, the tamped fill shall be placed to a depth of 1 foot over the top of the structure, while in excavation sections, the tamped fill shall extend to the surface of the finished earthwork.

ARTICLE C-5 EARTH SHOULDERS

Section C-5.11 Description.

This item shall consist of a formation and compacting of earth shoulders or areas adjacent to curbs in conformity with the lines, grades and cross sections shown on the plans and

Standards in accordance with these specifications.

Section C-5.12 Construction methods.

1. Earth shoulders shall be formed and compacted as soon as possible after the surfacing item is complete but, in the case of concrete work, not until permission has been given by the Engineer.

2. The earth shoulders shall be constructed with suitable materials from roadway or structure excavation, supplemented by additional suitable material, if directed, from borrow excavation. The entire shoulder area shall be uniformly and thoroughly compacted by rolling with a tandem or three-wheel roller or as directed by the Engineer.

3. Generally discernible variations will not be permitted and such variations shall be corrected to the lines and grades indicated in order to preserve a neat and uniform appearance.

ARTICLE C-6 TRIMMING EXISTING DITCHES

Section C-6.11 Description

This item shall consist of trimming, sloping and shaping existing ditches, within the limits indicated on the plans and Standards, in accordance with these Specifications and in conformity with the lines, grades and cross sections shown on the plans. It shall also include clearing and grubbing and the removal and disposal of surplus or unsuitable materials.

Section C-6.12 Construction methods.

Clearing and grubbing shall conform to the requirements of Section C-1.12 of these Specifications. Existing ditches parallel and contiguous to embankment slopes shall be trimmed, sloped and shaped in accordance with the grades and typical cross section shown on the plans and standards. All other existing ditches shall be trimmed, sloped and shaped to a uniform grade and cross section and side slopes shall be constant and at a slope as directed by the Engineer. Surplus or unsuitable materials removed in completing the work shall be disposed of in accordance with the requirements of Section C-2.11.

ARTICLE C-7 REMOVAL OF EXISTING PAVEMENT, SIDEWALK, CURB, AND COMBINATION CURB AND GUTTER

Section C-7.11 Description.

This item shall consist of the removal and disposal of such pavement areas as are designated on the plans and specified herein, inclusive of pavement, base courses, sidewalk, curb, and combination curb and gutter.

Section C-7.12 Construction methods.

1. Removal of base course, pavement, sidewalk, curb, and combination curb and gutter shall be for the full depth

thereof. The Contractor shall use such suitable equipment, tools and methods for cutting and trimming as will remove the materials to the neat lines set by the Engineer and will not in any manner disturb or damage the sections of base or pavement to be salvaged. Power chisels shall be used whenever the type and density of material requires. If the amount of pavement removal is of sufficient size to warrant the use of graders, power shovels or similar equipment, they shall operate only in such areas and in such manner as will not violate the above provision. Damage done to those areas designated for salvaging, by the Contractor's equipment or methods, shall be repaired and restored at the Contractor's expense. Where the old subgrade is satisfactory as to condition and elevation, special care shall be taken in the removal operation in order to avoid the disturbing of the old subgrade.

2. The old pavement materials resulting from this removal operation shall be broken up and placed in the embankment in accordance with the provisions of Section C-2.13, or disposed of as excess or unsuitable material in accordance with the requirements of Section C-2.11 of these Specifications.

ARTICLE C-8 REMOVAL OF EXISTING MASONRY

Section C-8.11 Description.

This item shall consist of the removal and disposal, wholly or in part, of all existing dry cement rubble or concrete masonry as designated on the plans or all such masonry as may interfere with new work.

Section C-8.12 Construction methods.

1. All old masonry structures of dry, cement rubble or concrete masonry designated on the plans to be removed or any masonry interfering with the new construction shall be removed from the limits shown or to such extent that the portions remaining will conform to the design and construction of the new work. In general, all such masonry shall be removed to the natural ground surface or to a depth of at least one (1) foot below cut or fill slopes and to a depth of at least nine (9) inches below subgrade elevation between the shoulder lines in embankment sections or between gutter lines in excavation sections. Portions of old footings fouled by new construction shall be entirely removed. Portions of old footings not fouled by new construction shall be removed to at least one (1) foot below the stream bed or if not occurring in stream bed, to the limitations set forth in the second sentence herein.

ARTICLE C-9 REMOVAL OF EXISTING BRIDGE SUPERSTRUCTURE

Section C-9.11 Description.

This item shall consist of the removal and disposal, wholly or in part of existing bridge superstructures as indicated on the plans and specified herein.

Section C-9.12 Construction methods.

Steel and timber superstructures shall be removed in such manner that damage will not occur to any member. In the dismantling of structural steel, no burning, cutting, or bending of members will be permitted. Riveted and bolted joints may be disconnected by cutting the rivet or bolt heads. All members of trusses shall be match-marked with white lead paint before dismantling. Timber superstructures shall be removed without cutting, bruising, or splitting, except where cutting will net, in the opinion of the Engineer, a more valuable salvage than other methods.

LIBER 2 PAGE 61

DIVISION C
PART II
BASE COURSES

II - 30

Section C-21.21 Description.

This Sub-base shall consist of a bed of pervious material and shall be constructed in accordance with these specifications.

Section C-21.22 Materials.

One of the following described materials shall be used. The type shall be optional with the Contractor unless otherwise specified.

Type 1: Type 1 sub-base material shall be either sand, or stone, or slag screenings having the following gradation:

Per Cent Passing Square Opening Screens

3/4"	Min. 100%	Max.
1/2"	90%	100%
No. 100	10%	30%

The plasticity index of the material passing a No. 40 screen shall be not more than 3.

Type 2: Type 2 sub-base material shall be a bank-run gravel or crusher-run stone or slag having the following gradation:

Per Cent Passing Square Opening Screens

2 1/2"	Min. 100%	Max.
2"	90%	100%
1"	70%	100%
No. 10	25%	75%
No. 100	0%	20%

The plasticity index of the material passing a No. 40 screen shall be not more than 3.

Section C-21.23 Preparation of Sub-grade.

1. Prior to the construction of the base, the previously constructed sub-grade shall be cleaned of all foreign substance. After the sub-grade has been shaped to line, grade and cross-section, it shall be rolled with an approved 10 ton, three-wheel power roller. All boulders or ledge stone encountered in the excavation shall be removed or broken off to a depth of not less than nine inches below sub-grade. The resulting area and all other low sections, holes or depressions shall be brought to the required sub-grade with approved material and thoroughly compacted. The sub-grade shall in every area be compacted to 95% of the maximum density obtained at the optimum moisture content as determined by a compaction test in accordance with A.A.S.H.O. Designation T99-49.

2. All utility trenches such as sanitary sewers, water lines and gas lines, shall be thoroughly consolidated and compacted. All soft and unstable back-fill material shall be removed and replaced with approved material.

3. The sub-grade shall be maintained and protected from damage, free from ruts, depressions and irregularities,

true to line and grade. The base course shall not be placed until the sub-grade as prepared and maintained has been checked and approved by the Engineer.

Section C-21.24 Construction methods.

1. One of the types of sub-base material shall be placed on the sub-grade in a manner that will prevent segregation. In no case shall each layer exceed a loose thickness of six (6) inches. Each layer of the sub-base shall be uniformly spread and thoroughly compacted by one of the following methods: By mechanical tampers, a power roller weighing not less than ten (10) tons, or by use of a pneumatic tire roller which can be loaded to a gross weight of 200 pounds per inch of tread width.

2. Should the materials be dry when placed, sprinkling with water will be required in order to facilitate compaction.

3. The finished surface shall conform to the grades and cross-sections as shown on the plans and in the Standards.

ARTICLE C-22 STABILIZED SOIL BASE COURSE

Section C-22.21 Description.

This item shall consist of a stabilized soil base course with a bituminous surface course as specified and shall have the cross-sections and compacted thickness as shown on the plans and in the Standards and shall be constructed in accordance with these specifications.

Section C-22.22 Materials.

The coarse aggregate and screenings for this work shall consist of crushed rock or crushed slag conforming to the requirements of A.A.S.H.O. Designation M75. The coarse aggregate shall meet the gradation of the A.A.S.H.O. Designation No. 3 for 2 inch to 1 inch size material.

Section C-22.23 Construction methods.

1. In preparing for the placing of the stabilized base course, the sub-grade shall be finished to an elevation 3 inches below the finished grade elevation, as shown on the plans. After the sub-grade has been shaped to conform to line and grade, it shall be scarified 3 inches in depth to the width shown on the plans, and the scarified material shall be windrowed on the shoulders on either side of the road metal. In pushing out this scarified material care should be taken to retain in the newly prepared sub-grade a crown similar to that of the finished roadway. Upon this newly formed sub-grade shall be spread, by means of a mechanical spreading box, coarse aggregate chips in the amount of 260 pounds per square yard. This material shall be spread evenly over the sub-grade and mixed thoroughly with the windrowed material that shall be bladed in from the shoulders. Mixing shall be done by auto patrol graders.

2. Water shall be added in sufficient quantities during the mixing to prevent segregation of the materials. After being thoroughly mixed, the material shall be leveled and screenings in the amount of 140 pounds per square yard shall be spread on the roadway by means of a spreading box or other spreading machine. In no case shall material be dumped from a truck and spread with an auto patrol or similar device. These stone screenings shall be thoroughly mixed with the previously mixed chips and soil by means of an auto patrol or other suitable multiblade machine, and shall be watered while mixing until the materials are thoroughly mixed and the entire stabilized mix shall have reached the optimum moisture content, as directed by the Engineer. A thin layer of stone screenings shall be applied to finish the surface, if so desired.

3. During the mixing process all undesirable materials and all stone of a size larger than 3 inches shall be removed. The mixture shall then be spread over the roadway uniformly and to a section conforming to the finished roadway. It shall be thoroughly compacted by means of a multiple wheel pneumatic tire roller weighted to give a gross weight of 200 pounds per square inch of tire tread. Final rolling is to be done with an 8 to 10 ton power roller. Rolling shall be continued until the material is thoroughly compacted.

ARTICLE C-23 8" GRAVEL BASE COURSE

Section C-23.21 Description.

This item shall consist of the construction of an 8" compacted depth gravel base course for subsequent placement of a surface course. This base course shall be constructed on the approved sub-grade in accordance with these specifications and in conformity with the lines, grades, quantity requirements and typical cross-section shown in the plans and Standards.

Section C-23.22 Composition of mixture.

The gravel base course material shall consist of hard, durable particles or fragments of gravel mixed with sand, clay or other similar binder or filler with or without other admixtures, free from deleterious organic matters. Grading of the gravel shall comply with the following requirements:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieve
1½"	100
1"	90-100
¾"	60-95
No. 10	35-65
No. 40	20-45
No. 200	3-15

For the purpose of these specifications, materials retained on the No. 4 sieve shall be known as "Coarse Aggregate" and the material passing shall be known as "binder." Binder material shall consist of that naturally present in the gravel and such additional material required to produce a composite material complying with the requirements of gradation and cementing values. The fraction passing the No. 200 mesh sieve shall be less than one-half ($\frac{1}{2}$) of the fraction passing the No. 40 mesh sieve. That portion of the binder material passing the No. 40 mesh sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than 9 or less than 3.

Section C-23.23 Control of mixtures.

The general composition limits of the completed mixtures stipulated herein are master ranges of tolerance to govern mixtures made from any raw materials and they are the maximum and minimum. Samples of materials and mixtures will be taken as many times as necessary and mixtures must be maintained.

Section C-23.24 Determination of suitability of materials.

The Contractor shall assume full responsibility for supplying materials conforming with these specifications. Acceptance of the materials by the Engineer will be based on samples taken from the mixture in the roadway as hereinafter specified.

Section C-23.25 Equipment.

1. All equipment used in this work must be approved by the Engineer and shall be kept in satisfactory working condition. The Contractor shall provide sufficient equipment to perform the operations of spreading, sprinkling and compacting the base course mixture simultaneously and at a time when the moisture contained in the mixture is such that the required density may be obtained.

2. The hauling equipment shall consist of pneumatic tired vehicles equipped with dump bodies suitable for dumping the materials into spreader boxes or in a uniform windrow as directed by the Engineer.

3. Distributors used for applying water shall be so constructed that a uniform quantity (within 10% of the quantity designated by the Engineer) per square yard will be applied.

4. Any suitable type of machinery which will not injure the sub-grade or base course surface may be used in the mixing or spreading the aggregates or the completed mixture. Blades and moldboards shall be so constructed that the required crown can be readily obtained when the mixture is laid. Blade machines which cause corrugations in the finished base shall not be used.

5. Flat-wheel rollers and land rollers or clay-busters shall meet with the approval of the Engineer. Multiple-wheel, pneumatic tired rollers approved by the Engineer shall be constructed so that they can be located to a gross weight of 200

pounds per inch of tread width. The internal pressure in the tires shall be at least 45 pounds per square inch.

6. Materials, gauges or eveners shall be equipped with an adjustable gate and shall deliver a uniform section of material the height of which is not less than 25% of the width.

Section C-23.26 Preparation of sub-grade.

Prior to the construction of the base course the sub-grade shall be prepared in accordance with Section C-21.23.

Section C-23.27 Construction methods.

1. Placement of material - The material shall be deposited on the prepared sub-grade and it shall be thoroughly blade-mixed to the full depth of the layer by alternately blading the entire layer to the center and back to the edges of the road. After mixing the material it shall be left in a uniform windrow. The Contractor shall assume full responsibility for the proper blending of the material to obtain a mixture which will meet the specifications. After the mixing has been properly approved by the Engineer, samples will be taken and the mixture tested. Should the mixture fail to meet the required specifications, admixture material in the proper proportion shall be added. If the admixture is "binder" the binder material shall be deposited on the sub-grade separated from the windrow and pulverized to the extent that more than 90% will pass a one-half inch sieve and more than 60% will pass a number 10 sieve. After the binder has been pulverized, mixed and windrowed it shall be gauged or evened to the quantity required and shall be thoroughly mixed and blended so that the mixture shall be homogeneous in character. The Engineer shall then retest the material to determine its conformance with these specifications. In no event will the Contractor be permitted to spread or compact the material until such time as the Engineer has given his approval.

In lieu of blade mixing a traveling mixer of a type approved by the Engineer may be used. The Engineer shall, to insure suitability of the material deposited by the traveling mixer, take sufficient samples of the material and may allow the elimination of a windrow.

2. Spreading and Compacting - If the materials and sub-grade surfaces are dry the base course material shall be bladed to the edge of the roadway and the sub-grade moistened uniformly with water using the quantity designated by the Engineer. A small section of the windrowed material shall be spread uniformly over the sub-grade and water applied to the material after it has been spread. Any over-size material shall be removed by hand and deposited on the sides of the roadway. This layer of material shall be compacted using a multiple-wheel pneumatic tire roller approved by the Engineer. If the material sticks to the roller during the compaction operation the Contractor may cover the moistened layer with a thin layer of dry material before compacting. During the compaction operation care must be exercised to maintain a smooth surface and the

specific cross section. These operations shall be repeated until the last layer of mixture is placed. After the base course is shaped to the lines and grades shown in the plans and Standards, the surface shall be moistened thoroughly and compacted. Each layer must be securely bonded to the preceding layer. Any portion of the base course that is found to be laminated or improperly compacted shall be taken up and satisfactorily relaid. If necessary, additional water shall be applied as directed by the Engineer.

In lieu of the method of laying described above, the Contractor may, at the discretion of the Engineer, uniformly moisten a previously-spread windrow, or material deposited by traveling mixer, before compacting. When compacting the wetted mixture, utmost care will be required in compacting it to insure thorough compaction for the full depth of the compacted base course. Particular attention must be given to obtaining a secure bond between the sub-grade and the base course.

The moistening operations herein mentioned may be modified if the laying operations are performed during or following a period of rainfall. The necessity for the additional water, the quantity to be used and the time of application shall be determined by the Engineer. When the moisture content of the mixed materials becomes excessive because of rain the mixture shall spread on the sub-grade and the moisture content reduced by blading. Shaping and compacting shall start when the moisture content is such that the required density may be obtained. If the surface is dry after the shaping is completed it shall be moistened and rolled again. Rolling shall progress gradually from the sides to the center parallel to the center line of the road and leveling uniformly each preceding operation. Rolling shall be done with a multiple-wheel pneumatic tire roller approved by the Engineer. Special attention must be given to the compaction of the edges of the base course; and in all places not accessible to the rolling equipment, the material shall be compacted by pneumatic tampers or hand tampers weighing not less than fifty pounds. The Contractor shall compact the base course mixture so that the density of any part is at least 95% of the density at optimum moisture as determined by the "Proctor" method.

3. Successive Layers - Material for successive layers of base course shall not be deposited until the previous layer has been thoroughly compacted, tested, and approved by the Engineer. The procedure for the placement and compacting of successive layers shall be as specified for the initial course. The compacted base course shall not deviate more than one-half inch from the line grade and cross section shown on the plans and Standards.

4. Maintenance of the Compacted Base Course - After the base course has been compacted to the required density and shaped to the typical cross section shown in the plans and

Standards it shall be opened to traffic and for at least seven (7) days it shall be sprinkled and rolled or bladed as directed by the Engineer to maintain a smooth firm base course. The Engineer, at his discretion, may require the use of a three wheel power roller. Any irregularity or depressions that develop under such rolling shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform.

Section C-23.28 Prime coat for gravel base course.

1. Description - This work shall consist of an application of bituminous material on the previously-prepared base course in accordance with these specifications and in conformity with the lines and section shown in the plans and Standards and as directed by the Engineer.

2. Materials - The prime coat material shall be an MC-70 Cut-Back Asphalt meeting the requirements of A.A.S.H.O. Designation M82.

3. Equipment -

(a) Distributor and Supply Tanks - Distributors and Supply Tanks shall be mounted on dependable motor trucks or trailer which shall be equipped with pneumatic tires. Distributors shall also be equipped with the following appliances or devices: tachometer and distribution tables; pressure gauge or pump control device; adjustable length spray bars; heating coils and burner, or approved auxiliary heating device; separate power unit and pump or distributing system; thermometer well and an accurate thermometer; measuring sticks and suitable opening in drum. The separate power unit and pump distributing system shall have a capacity of not less than 200 gallons per minute and shall be capable of distributing any desired amount of material up to the rated capacity.

(b) Brooms - Brooms shall be designed, constructed and maintained so that they will sweep the loose particles from the surface.

4. Construction Methods - (a) The base course to be treated shall be cleaned thoroughly by blading and brooming. Loose, fine material shall be swept to the sides as directed by the Engineer.

(b) The material for prime coat shall be applied in a single application with an approved power distributor at a rate designated by the Engineer which shall be between 0.30 and 0.50 gallons per square yard. The temperature of the material shall be as designated by the Engineer. Uniform application of material will be required. If any spots are missed, additional material shall be applied by some means which will insure the application being made at the specified rate.

(c) The application of materials for prime coat will not be permitted on the surface to be covered if it is not dry to at least the depth of the expected penetration or when the atmosphere is less than 60 degrees F. in the shade. No bituminous material shall be applied between the dates of October 15th and April 1st unless specifically authorized by

the Engineer in writing.

(d) During the application of prime coat material the surface of all structures, wheel guards and other roadway appurtenances shall be protected in a satisfactory manner to prevent their being spattered or marred.

(e) When so directed by the Engineer, the prime coat shall be applied to one-third or one-half the width of the road at a time; confining traffic to that portion of the road not being treated. The application of prime to the second section shall not be allowed sooner than twenty-four hours after the application of the first prime coat; allowing traffic the use of the untreated surface. The newly-primed portion shall be closed to traffic for a period of twenty-four hours.

ARTICLE C-24 WATER-BOUND MACADAM BASE COURSE

Section C-24.21 Description.

This item shall consist of a water-bound macadam base course composed of broken stone or slag constructed on a properly prepared sub-grade and in conformity with the lines, grades, thickness and typical cross-section on the plans. When the cross-section calls for a compacted thickness of more than six inches, it shall be constructed in layers of equal thickness, each layer shall be bonded and finished to cross section and grade.

Section C-24.22 Materials.

The coarse aggregate and screenings to be used shall be sound crushed stone or slag meeting the requirements of A.A.S.H.O. Designation M75, except that the gradation requirements of the coarse aggregate shall be as follows:

Passing a 3½-inch sieve	100%
Passing a 3-inch sieve	90 to 100%
Passing a 2-inch sieve	25 to 60%
Passing a 1-inch sieve	0-15
Passing a ½-inch sieve	0-5

Section C-24.23 Preparation of sub-grade.

Prior to the construction of the base course, the sub-grade shall be prepared in accordance with Section C-21.23 of these Specifications.

Section C-24.24 Construction methods.

1. Placement of Coarse Aggregate - The coarse aggregate shall be placed upon the sub-grade prepared to the satisfaction of the Engineer in courses not to exceed six (6) inches compacted thickness, and spread uniformly by an approved method. No aggregate shall be dumped directly in piles upon the sub-grade.

2. Rolling Coarse Aggregate - After the No. 1 aggregate has been spread, the coarse aggregate shall be rolled with a three-wheel power roller weighing not less than ten (10) tons,

until the aggregate does not creep or wave ahead of the roller wheels. Rolling shall start from the sides and progress toward the center, except on super-elevated curves where the rolling shall begin on the low side and progress toward the high side. After the rolling has been completed, the unbonded course shall be inspected carefully, and irregularities either longitudinal or transverse, in excess of one-quarter ($\frac{1}{4}$) inch in sixteen (16) feet shall be eliminated and the road re-rolled to a compact, smooth surface. Any development of a spongy condition in the rolling process will justify a discontinuance of the rolling for a time sufficient to permit the drying out of the sub-grade or the complete removal of the base course and a treatment of the sub-grade, all of which will be done under the direction of the Engineer.

3. Application of Screenings - After the coarse aggregate has been properly compacted, the dry screenings shall be placed in thin applications, broomed and rolled until the voids are thoroughly filled. The base course shall then be sprinkled and rolled until a firm, even surface is obtained. Additional screenings shall be applied where voids appear under rolling and construction continued. The quantity of screenings and water necessary shall be determined by the Engineer and shall be sufficient to produce a rough, granular surface. The application of screenings to any section shall be made not later than one working day after placing the coarse aggregate. The base course shall be constructed at least 1,000 feet in advance of the surface course or pavement.

4. Finishing - The macadam base shall be continually sprinkled, additional screenings added, and rerolled as much as may be necessary, to bond it thoroughly and secure a satisfactory surface. The Contractor shall arrange his work so that the spreading of the stone shall begin at the point nearest the source of supply. Hauling shall be done over the base course to aid compaction, except where otherwise permitted by the Engineer. The Contractor shall refill and bond all test holes dug by the Engineer.

5. Surface Tolerance - After final rolling, the surface shall be inspected carefully and irregularities, either longitudinal or transverse, in excess of one-quarter ($\frac{1}{4}$) inch in sixteen (16) feet shall be eliminated, and the road rerolled to a compact, smooth surface.

ARTICLE C-25 ASPHALTIC CONCRETE BASE COURSES

Section C-25.21 Description.

This item shall consist of a four inch compacted course of asphalt coated mineral aggregate, constructed on a prepared base, to conform to the required grades and cross section shown on the plans.

All asphaltic materials specified herein shall conform to the requirements shown in these specifications; all

other materials in the methods of preparation and construction shall conform to the requirements of these specifications.

Section C-25.22 General requirements.

1. The general composition limits prescribed in the tables of proportions are master ranges of tolerance to govern mixtures made from any materials meeting the specifications, and they are maximum or minimum for all cases. A close control, appropriate to the job materials, is required for each specific project in accordance with the job mix formula as follows:

"No work shall be started on a specific project, nor any mixture accepted therefore until the Contractor has submitted and received approval of his intended source of all component materials and his job mix formula, indicating in writing the single definite percentage for each sieve fraction of aggregate and asphalt which he chooses as the fixed mean in each instance, and also the intended temperature of the completed mixture taken as it is dumped from the mixer."

2. The submission of such job mix formula shall, upon approval and thereafter, bind the Contractor to furnish paving mixture not only within the master ranges given, but as a further requirement, also meeting the exact formula thus set up for the project within allowable job tolerances with plus or minus five tenths (0.5) of one percent for asphalt, plus or minus eight percent (8%) for the number four and the larger sieve requirements, plus or minus four percent (4%) for the number ten and the smaller sieve requirements, and plus or minus twenty degrees (20°) for temperature of mixture at the plant. No job mix formula with or without the tolerances given above shall be outside the master range in any respect.

3. The Engineer shall extract for testing purposes samples cut from the finished pavement. The material so removed shall be replaced with new mixture and refinished by the Contractor. The asphalt shall be of such quality that when extracted and recorded by the "Abson" Method from the finished pavement, either base or surface course, the penetration of the extracted bitument shall be not less than 45 for 85-100 penetration asphalt, and 100-120 penetration asphalt.

Section C-25.23 Paving plant requirements.

1. The plant shall be so designed, equipped and operated that the weighing, proportioning and mixing of the materials will result in a uniform and satisfactory product, meeting the requirements of these specifications.

2. The dryer shall be of the rotating, cylindrical type suitably designed to heat and dry the aggregate to specification requirements, without direct flame coming in contact with the aggregate and to agitate the aggregate continuously during the heating. The dryer shall be capable of preparing aggregate to the full rated capacity of the paving plant.

3. The plant shall be provided with accurate mechanical means for uniformly feeding the mineral aggregate

into the dryer so that uniform production and uniform temperature will be obtained at all times.

4. All plant screens shall be designed, constructed and operated that they will screen all aggregates to their specified sizes and proportions and shall have a capacity, when operated at normal speed, slightly in excess of the maximum capacity of the mixer.

5. The bins which serve as storage space for screened material shall be of sufficient size to satisfy the rated capacity of the mixer without the necessity of reducing screen efficiency by crowding with aggregate.

6. Storage bins shall be divided into three (3) compartments, one of which shall be reserved for material passing the No. 10 sieve. Each compartment shall be provided with an over-flow pipe of such size and at such locations as to prevent any backing up of material into other compartments.

7. The plant shall be equipped further with an approved dial scale mercury actuated thermometer, an electric thermometer, or other approved thermometric instruments so placed at the discharge chute of the dryer as to register automatically the temperature of the aggregates.

8. All plant storage bins shall be so arranged that the aggregate can feed directly into the weighing hopper by gravity flow and can be readily and accurately cut off when sufficient quantity has been weighed. Such bins shall be equipped with gauges visible from the weighing platform, which shall clearly indicate the quantity of material in each bin.

Section C-25.24 Batch mixing plant.

1. Weighing devices shall be provided for the proportioning of all aggregates and bituminous material on the basis of weight.

2. The weight box shall be of sufficient capacity to hold the maximum amount of the aggregate material for one batch. The weight box or hopper shall be supported on fulcrums and knife edges, so constructed that they will not be easily thrown out of alignment or adjustment. Said weighing hoppers must be free from contact at all edges, ends, or sides with any supporting rods or columns, or other equipment that will in any way affect its proper functioning. In addition, there must be sufficient clearance between the hopper and supporting device that foreign materials will not accumulate. The discharge gate of the weight box shall be so hung that the aggregates will not be segregated when dumped in the mixer. If necessary to correct any such tendency, baffles shall be installed or other means provided to discharge the materials in a blended condition.

3. Scales for the weight box may be of either the beam or springless dial type, and shall be of a standard make and design, sensitive to one-half of one percent of the maximum load that may be required. When the beam type is used, there shall be a separate beam for each size of aggregate and a tare beam for balancing the hopper. There shall be pro-

vided a "telltale" dial scale that will start to function when the load being applied is within 100 pounds of that desired. Each beam shall have a locking device designed and so located that the beam can easily be suspended or thrown into action.

4. Dial scales shall be of a standard make and of sufficient size that the numbers on the dial can be read at a distance of not less than twenty-five (25) feet. The dials shall be of the compounding type having full complements of indirect pointers. All dial scales shall be located as to be plainly visible to the operator at all times.

5. Scales for the weighing of asphalt cement shall conform to the specifications for the aggregate scales except that the beam scales shall be equipped with a tare beam and a full capacity beam. The value of the minimum graduation in any case shall not be greater than two (2) pounds. Dial scales for weighing the asphaltic cement shall have capacities each of not more than fifteen (15) percent of the capacity of the mixer and shall read to the nearest pound.

6. The Contractor shall provide and have at hand a sufficient number of fifty (50) pound standard test weights for frequent testing of all scales.

7. The asphalt weight bucket shall be steam jacketed and have a capacity equal to not less than twelve percent (12%) of the maximum capacity of the mixer. It shall be supported on fulcrums and knife edges in the same manner as the weight box.

8. Asphalt cement shall be kept in storage tanks which are equipped with steam coils capable of maintaining the asphalt temperature as hereafter provided. Asphalt lines and fittings shall be steam jacketed.

9. The plant shall include a batch mixer of an approved type consisting of a twin pug mill or rotary drum steam jacketed unit, equipped with a sufficient number of paddles or blades and set to produce properly mixed batches of any material required under these specifications. The clearance of the blades in the twin pug mill type shall not exceed one (1) inch, unless the maximum diameter of the aggregate particle exceeds one and one-quarter ($1\frac{1}{4}$) inches.

10. The minimum mixing time of 45 seconds hereinafter prescribed for a mixer capacity, shall be for a 1500 pound batch, provided that if smaller mixers are approved no decrease in time of mixing will be allowed, and if sufficient mixing and coating is not secured the right is reserved to increase the required mixing time, as may be judged necessary by the Engineer.

Section C 25.25 Plant inspection.

1. The preparation of all bituminous mixtures shall be subject to inspection at the plant. The Engineer shall have access at any time to all parts of the paving

LIBER 2 PAGE 74

plant for the verification of weights or proportions and character of materials and determination of temperatures used in the preparation of the job mixture. No materials shall be mixed without supervision by the Engineer.

Section C-25.26 Preparation of asphaltic concrete mixture.

1. The asphalt shall be heated in kettles or tanks, to secure uniform heating of the entire contents and to a temperature specified for the particular type of mix. The asphalt, as received at the paving plant, shall be of such penetration as will permit its remaining within the prescribed minimum and maximum penetration limits throughout the entire period of its use.

2. The mineral aggregate shall be dried and heated within the range of temperature specified for the individual type of mixes, shown at the discharge end of the dryer. The coarse aggregate shall be separated cleanly into the different sizes and shall stand in separate bins. The aggregate passing the No. 10 sieve also shall be cleanly separated from the coarse aggregate and stored in a separate bin.

3. In the case of a batch mixing plant, appropriate weights of each size aggregate shall be accurately weighed within two percent (2%) of the batch weight into the weighing hopper. The temperature of the aggregate at the time of the introduction of asphalt into the mixing chamber shall be within the range of temperature for the desired type of mix. The required quantity of asphalt shall be weighed in the asphalt bucket and added to the well-mixed aggregate in the mixing chamber at a uniform rate and in a thin layer, completely across the width of the mixing chamber. The mixing of the aggregate and asphalt shall be continued for a period of not less than 45 seconds after all of the asphalt has been added, or longer if necessary to secure uniformly coated particles and an even distribution of asphalt throughout the mix.

4. The combination of aggregate and asphalt shall have such stability that the coating will not separate from the aggregate upon contact with water, nor shall the mixture have a swell of more than one and one-half percent (1½%).

5. The temperature of the mixture, when loaded into the trucks, shall be within the limits as hereinafter specified.

Section C-25.27 Transportation and delivery of mixture.

1. The bituminous mixture shall be transported from the paving plant to the work in tight vehicles previously cleaned of all foreign materials, and shall be covered by tarpaulin or other suitable covering to prevent the entrance of moisture or the loss of volatile material or heat during transportation.

Section C-25.28 Preparation of sub-grade.

1. The sub-grade shall be prepared in accordance with the requirements set forth in Section C-21.23 of these specifications.

Section C-25.29 Spreading and finishing.

1. The bituminous material shall not be spread on a wet sub-grade nor more than an average day's spreading in advance of rolling. Contact surfaces of curbs and gutters shall be painted with a thin uniform coating of asphalt cement before the mixture is spread.

2. The mixture shall be spread by means of a mechanical self-powered paver or strike-off assembly, either a combination machine or in multiple units, capable of spreading the mixture true to the line, grade and approved cross-section. Pavers shall be equipped with hoppers and distributing screws of the reversing type to place the mixture evenly in front of adjustable screens. The exact edge and grade of the base course, except on concrete, shall be established by a string or chalk line placed ahead of spreading of the mixture.

3. The term "screed" includes a strike-off device operated by cutting, crowding or other practical action which is effective on the mixtures at workable temperature without tearing, shoving or gouging, and which produces a finished surface of the evenness and texture specified. The screed shall be adjustable as to level and shall have an indicating level attached.

4. Immediately after any course is screeded, and before roller compaction is started, the surface shall be checked, any irregularities adjusted, all fat or sandy accumulation from the screed removed by a rake, and all fat spots removed and replaced with satisfactory material.

5. In narrow base widening, deep or irregular sections, intersections, turnouts or driveways, where it is impracticable to spread and finish the base by machine methods, acceptable hand methods may be used as directed by the Engineer.

6. On rough or irregular sections, or when the depth of the material being placed is greater than two and one-half ($2\frac{1}{2}$) times the maximum size of the aggregate in the mixture being spread, the material shall be laid in two or more courses, using a straightedge before and after rolling.

7. When the mixture is to be spread by hand, it shall be dumped upon a steel dump board outside of the area on which it is to be spread. The mixture shall then be distributed into place by means of hot shovels and spread with hot rakes in a loose layer of uniform density and correct depth.

Section C-25.30 Compaction.

1. After spreading and while still hot, the mixture shall be thoroughly and uniformly compacted by rolling. Compaction shall be effected with at least one 10 ton tandem power roller, in good condition, capable of reversing without

backlash, weighing not less than 250 pounds to the inch width of tread. Rolling shall start longitudinally at the extreme sides and proceed towards the center of the pavement, overlapping on each successive trip by at least one-half the width of the rear wheel of the roller. The surface shall then be subjected to diagonal rolling in two directions, the second diagonal crossing the lines of the first one.

2. If the width of the roadway permits, the pavement surface shall also be rolled at right angles to the center line. Rolling shall be continued until all roller marks are eliminated and a surface course density of at least 94 percent of the theoretical maximum density has been obtained.

3. The motion of the roller shall at all times be slow enough to avoid displacement of the mixture, and in no case shall the roller speed exceed 130 feet per minute. Any displacement of the mixture occurring as a result of reversing the direction of the roller or from any other cause, and any other surface irregularities developed by rolling, shall at once be corrected by the use of rakes and fresh mixture applied when required. Straightedging and backpatching shall be done immediately after initial compaction has been secured and while the material is still workable.

4. For a radial distance of eight inches around all structures, along curbs, gutters and where it is impracticable to obtain proper compaction with rollers, compaction shall be effected with hot iron tampers. To prevent adhesion of the mixture the roller wheels shall be kept moistened with a minimum amount of water; oil shall not be used for this purpose. The surface after compaction shall not show an excess of asphalt cement and any material showing such excess shall be removed and replaced with new material. Any material broken up excessively during the process of spreading or rolling, or which remains unbound after rolling, shall be removed and replaced with new materials.

5. No traffic, except in connection with the delivery of the mixture shall be permitted on the base course, and all base course materials which have been coated with any foreign material or that is loose shall be removed and replaced with new material.

6. Any irregularities in the bituminous surface exceeding one-quarter inch must be corrected. For the purposes of testing the surface, a ten foot straightedge shall be used. Irregularities from true grade which develop before the completion of rolling shall be remedied by loosening the mixture laid and adding new material where necessary to bring such irregularities to a true surface. Should any irregularities remain after final compression has been secured, the bituminous material shall be removed for its full depth and new material laid to form a true and even surface.

7. It is the responsibility of the Contractor to constantly check the surface while it is being rolled with

the straightedge laid parallel to the center line of the pavement. The Contractor shall be held responsible for the trueness of the pavement surface, and shall be required to make good any deviations exceeding one-quarter inch from the alignment, grade and crown specified. It is the Contractor's function to use the straightedge and obtain the results, the Engineer's to check the results.

8. No binder or base course shall be left uncovered by surface course for more than five days. When, in the opinion of the Engineer, the binder or base has become dry and/or dirty previous to the application of the surface course, a prime shall be applied as instructed by the Engineer.

Section C-25.31 Joints.

1. Longitudinal and transverse joints shall be made in a careful manner, well bonded and sealed. If necessary to obtain this result, the joints shall be painted with hot asphalt cement, or heated with approved heating irons, as directed by the Engineer.

2. Joints between old and new pavements, or between successive sections, shall be carefully made in such a manner as to insure a proper bond between the old and new surface for the full depth of the course as described above.

3. Joints shall be formed at the end of each day's work, or when placing may become discontinued for a length of time sufficient for the material to become chilled, by laying and rolling against boards of the thickness of the compacted mixture placed across the entire width of the pavement or length of joint, or by such other method as may be approved by the Engineer. When the placing of the mixture is resumed, the exposed edge of the joint shall be treated as described above.

4. In making the joints along any adjoining edge, such as curb or gutter or an adjoining pavement, and after the hot material is placed by the finishing machine, enough of the hot mixture shall be carried back to fill any space left open. This joint shall be properly "setup" with the back of the rake at proper height and level to receive the maximum compression under rolling.

Section C-25.32 Seasonal and weather limitation.

1. Asphaltic concrete shall not be placed between November 15th and April 1st or when the temperature or the air or the base on which the material is to be placed is below 50° F., and is not visibly dry, except by special written permission by the Engineer.

Section C-25.33 4" Asphaltic Concrete - Base Course - Type B (Stone Mix)

1. Description - This item shall consist of 4" compacted thickness asphaltic concrete base course constructed upon a prepared sub-base in accordance with Article

C-21, primed with bituminous material. The asphaltic concrete base course shall consist of a combination of coarse aggregate, fine aggregate and bituminous cement meeting the requirements of these specifications. The general requirements specified in Article C-25 shall apply in all respects to this item except where otherwise indicated in the specific requirements given below.

2. Materials

(a) The asphaltic concrete, Type B, shall be composed of a mixture of coarse stone, slag and sand, slag or stone screenings of the proper sizes combined with 85 - 100 asphalt cement, as specified, to give the grading an asphaltic content required by these specifications.

(b) All aggregate shall meet the requirements set forth in A.A.S.H.O. Standard Specifications for Crushed Stone and Crushed Slag for Bituminous Concrete Base Course, Designation M76 except for gradation which shall be as hereinafter specified.

(c) The asphalt cement shall meet the requirements set forth in A.A.S.H.O. Standard Specifications for Asphalt Cement Designation M20.

(d) The bituminous prime material shall be RC-70, RC-250, MC-70, MC-250, meeting the requirements of the A.A.S.H.O. Standard Specifications for Cut-Back Asphalt Designations M81.

3. Construction Methods - After the sub-base has been brought to a true line, grade and cross section, the bituminous prime material shall be applied at a rate of 0.3 to 0.5 gallons per square yard, as directed by the Engineer, covering the entire area on which the asphaltic concrete mixture is to be placed. The prime coat shall be given sufficient time to setup and penetrate the sub-base before the next construction item is started. Bituminous material shall not be applied to wet or saturated surfaces, and the material shall be applied to $\frac{1}{2}$ of the road surface only.

4. Proportions - The asphaltic concrete shall conform to the following composition limits, by weight:

P-3 (Refer to State - Section 20.25-2)

Screen Fine	Size Course	Percent Passing
	1 3/4 in.	100
	1 1/2 in.	
	1 1/4 in.	85-100
	1 in.	77-95
	3/4 in.	67-85
	5/8 in.	...
	1/2 in.	...
	3/8 in.	47-67
# 4		30-48
# 10		17-34
# 20		13-26
# 40		9-20

# 80	5-12
# 200	2-6
% A.C. - For Stone	3.5-6.0

TABLE OF MIXING AND LAYING TEMPERATURES

Aggregate in mixing chamber	290°F. to 350°F.
Asphalt cement	250°F. to 350°F.
Laying temperature	275°F. to 320°F.

Section C-25.34 - 4" Asphaltic Concrete - Base Course -
Type B (Gravel Mix)

1. Description - This item shall consist of a 4" compacted thickness asphaltic concrete base course constructed on a previously prepared sub-grade.

2. Materials -

(a) The asphalt cement for this pavement shall conform to the A.A.S.H.O. Designation M20 for 85-100 or 100-120 penetration asphalt cement.

(b) The mineral aggregate shall consist of broken slag, stone, or gravel. It shall have a Los Angeles abrasion loss not greater than 40%. Slag shall weigh not less than seventy pounds per cubic foot for each commercial size used. If gravel is used it shall be composed of sound, hard, durable pebbles free from clay or coatings of any character. Uncrushed gravel must be angular in shape and have a rough texture surface. The maximum size of sand shall not exceed 3/8" and shall be free from lumps or clay balls.

(c) The mineral filler shall consist of limestone dust conforming to A.A.S.H.O. Designation M17, except that the material passing the No. 200 sieve shall not exceed 75%.

3. Construction Methods -

(a) The 4" asphaltic concrete base course shall be placed upon the previously constructed sub-grade and shall conform to the requirements set forth in Article C-25 - Asphaltic Concrete Base Course.

G-3 (Refer to State - Section 20.25-3)

Fine	Coarse	Percent Passing
	1 3/4 in.	100
	1 1/2 in.	90-100
	1 in.	80-98
	3/4 in.	...
	1/2 in.	65-85
	3/8 in.	...
# 4		50-70
# 10		35-55
# 40		15-30
# 80		6-18
# 200		2-10
% A.C. by wt.		4.0 - 6.5

The proportion of bitumen to total aggregate weight shall be 5.5 to 8.0%.

The fraction actually retained between any two consecutive sieves shall be not less than four (4%) percent. At least one-half ($\frac{1}{2}$) of the fraction passing the No. 200 mesh sieve shall be mineral filler. The 4 to 8 percentage passing the No. 200 mesh sieve is inclusive of any mineral dust naturally present in the refined asphalt.

TABLE OF MIXING AND LAYING TEMPERATURES

Aggregate	250° F. to 350° F.
Asphalt Cement	250° F. to 350° F.
Laying Temperature	275° F. to 320° F.

DIVISION C
PART III
SURFACE COURSES AND PAVEMENTS

ARTICLE 31 PENETRATION MACADAM SURFACE COURSE

Section 31.31 Description

This surface course shall consist of one course wearing surface of the depth, grade and cross section shown on the plans, composed of aggregate and bituminous binder with two bituminous seal coats, together with stone or slag chip cover, constructed on the prepared base course by the penetration method in accordance with these Specifications.

Section 31.32 Materials

The bituminous material to be used on this work shall be an asphalt prepared from petroleum (85-100), a liquid asphalt RC-3000 or RS3K Cationic Emulsion meeting the requirements of the Maryland State Roads Commission Specifications Article 20.14.

The coarse aggregate shall be a No. 2 aggregate for the surface course, a No. 3 aggregate for the chips, a No. 4 aggregate for the first seal coat and a No. 7 aggregate for the second coat, conforming to the gradation and requirements of Maryland State Roads Commission Specifications Article 20.05.

Section 31.33 Construction Methods

The Penetration Macadam surface course shall be a minimum of three (3") thick after final compaction and shall be constructed in the following manner:

1. SPREADING COARSE AGGREGATE.

The prepared base course shall be clean and free of all foreign substances before the coarse aggregate is placed upon it. Coarse aggregate shall be spread uniformly over the surface and against previously formed earth shoulders. Shoulders shall be as nearly vertical as practicable. Coarse aggregate shall be spread directly from an approved mechanical spreader box. In no case shall the aggregate be dumped directly on the foundation of the previous course. The aggregate shall be spread to produce a surface course of the thickness specified above. It shall not be spread on wet or frozen material. If necessary a blade type grader may be used to shape the aggregate course, but it may not be used to spread it.

2. COMPACTING COARSE AGGREGATE.

Immediately after the coarse aggregate has been spread it shall be compacted with a three-wheel power roller weighing not less than 10 tons, and operating at a speed not to exceed 3 miles per hour until the aggregate is consolidated to a firm even surface true to the specified grade and cross section. Rolling shall be done longitudinally, beginning at the sides, overlapping the shoulders at least one (1) foot, and progressing toward the centerline. Rolling shall be continued until the surface is firm and even and does not creep or wave ahead of the roller.

3. APPLICATION OF BITUMINOUS BINDER.

No bituminous material shall be placed unless the entire depth of stone surface course is entirely dry, and the air temperature is at least 65° F., or above for 85-100 or 40° F., for RC-3000 and has been above 32° F., for at least 8 hours. Any of the surface course which has become mixed with dirt shall be removed and replaced with clean stone before application of bituminous material.

After the coarse aggregate has been rolled as above and the requirements paragraph (a) have been met, there shall be spread over the surface 1½ gallons of bituminous binder to each square yard of the surface area. Bituminous material, 85-100 shall be heated to a temperature between 325° and 350° F., RC-3000 to a temperature between 250° and 265° F.

The Bituminous binder 85-100 shall be spread uniformly over the surface by an approved pressure type distributor.

After the bituminous binder has been applied and while it is warm, a layer of #3 aggregate shall be spread over the surface in such quantity as will just fill the voids and cover the entire surface aggregate. The chips shall be spread from trucks equipped with a spreading device and the truck shall be operated in reverse so that they travel over the material being spread. As soon as the surface has been covered with aggregate it shall be rolled with a three-wheel roller weighing not less than 10 tons, and broom dragged to fill all the surface voids and remove irregularities. The surface shall then be checked with a ten foot straight edge and any irregularities greater than one half (½) inch shall be corrected by patching.

After the surface has been compacted as above, it shall be swept clean of all loose stone and a seal coat of approximately 0.7 gallon of bituminous binder 85 to 100 to the square yard of surface and shall be evenly applied. This application shall be made as specified above. Immediately after the binder material has been applied, it shall be covered entirely with a layer of No. 4 aggregate at the rate of 25-30 lbs. per square yard. It shall then be lightly rolled and broom dragged, after which it shall receive a second rolling.

Immediately prior to the application of the final seal coat RC-3000 the surface shall be broom dragged and any loose material removed. The surface shall then be rolled. If there is any dust on the surface it shall then be washed dust free before the application of the asphalt, and after a 24 hour waiting period. The asphalt seal coat RC-3000 shall then be applied at the rate of .3 gallon to the square yard of surface and shall be evenly applied. This application shall be made as specified above. Immediately after the binder material has been applied it shall be

covered entirely with a thin layer of #7 aggregate at the rate of 20 lbs. to the square yard. It shall then be lightly rolled and broom dragged, after which it shall receive a second rolling.

ARTICLE C-32 HOT-MIXED, HOT-LAID, ASPHALTIC CONCRETE PAVEMENT

Section C-32.31 Description

1. Hot-mixed, hot-laid asphaltic concrete is defined as a type of paving material consisting essentially of a hot-mixed, hot-laid combination of coarse aggregate and fine aggregate, with or without mineral filler, uniformly coated and mixed with asphalt cement in a suitable plant, and placed on previously prepared base.

Section C-32.32 Materials.

1. The coarse aggregate shall be crushed stone, crushed slag, or gravel conforming to the requirements of the Standard Specifications for Crushed Stone, Crushed Slag, and Gravel for Bituminous Concrete Base and Surface Course of Pavements A.S.T.M. Designation: D-692. The grading of the coarse aggregate shall conform to the requirements shown in Table I of this specification.

2. The fine aggregate shall consist of natural sand or sand prepared from stone, air-cooled iron blast furnace slag, or gravel or combinations thereof, and shall conform to the requirements of the Tentative Specifications for Fine Aggregate for Sheet Asphalt and Bituminous Concrete Pavements A.S.T.M. Designation: D-1073. The grading of the fine aggregate shall conform to the requirements shown in Table II of this specification.

Simplified Practice	Size	Square Sieve						Total % Passing			
		S.R.C.	3 1/2" 3"	2 1/2"	2"	1 1/2"	1-0"	3/4"	1/2"	3/8"	#4 #8
1A	1	100	90-100	25-60			0-15		0-5		
3	2			100	90-100	35-70	0-15		0-5		
467				100	95-100			35-70		10-30	0-5
57	6				100	90-100			25-60		0-10 0-5
6	3					100	90-100		20-55	0-15	0-5
67	8					100	90-100			20-55	0-10 0-5
78	4						100	90-100	40-75	5-25	0-5
8	7							100	85-100	10-30	0-10

TABLE II - GRADING REQUIREMENTS FOR FINE AGGREGATE

Sieve Size	Amounts Finer than Each Laboratory Sieve (Square Openings). Per Cent by Weight
No. 4	100
No. 8	95 to 100
No. 16	80 to 100
No. 30	65 to 90
No. 50	35 to 65
No. 100	5 to 25
No. 200	0 to 5

3. Mineral Filler. Mineral filler shall consist of thoroughly dry limestone dust, slag dust. Portland cement or other approved mineral dust which shall be reasonably uniform in grading and shall meet the following requirements:

Sieve	Minimum Per Cent Passing
#30	100
#100	85
#200	65

4. Asphalt Cement. The asphalt cement shall conform to the Tentative Specifications for Asphalt Cement for Use in Pavement Construction A.S.T.M. Designation: D-946. The penetration grades shall be 60-70, 70-85, 85-100, 100-120, or 120-150 as specified by the Engineer. (Note: The exact penetration grade to be used depends on the type of construction, climatic conditions, and amount and nature of the traffic that is expected to use the road.)

Section C-32.33 Mixing.

1. The mixture shall conform to one of the compositions by weight, given in Table III.

TABLE III - COMPOSITION OF ASPHALTIC CONCRETE PAVING MIXTURES

Table of Bands
Percent passing square openings

Screen Fine	Size Course	PF-1	PC-1-61
	1 3/4 in.	....	....
	1 1/2 in.	....	....
	1 1/4 in.	....	....
	1 in.	....	....
	3/4 in.	....	....
	5/8 in.	....	100
	1/2 in.	....	92-100
	3/8 in.	100	75-90

LIBER 2 PAGE 86
TABLE III (Cont'd)

Screen Fine	Size Course	PF-1	PC-1-61
# 4		80-100	56-72
# 10		58-80	40-54
# 20		33-56	26-40
# 40		18-36	16-30
# 80		11-25	8-20
# 200		4-14	2-9
% A.C. For Stone		6.0-9.0	5.0-7.5
by wt. For Slag		7.0-10.0	7.0-10.0

Gradation determination shall be made by dry screening. Material retained on the No. 4 screen shall be coarse aggregate.

All material passing the No. 4 screen shall be fine aggregate. Sand containing less than 5% material retained on No. 4 screen may be used in combination with other materials, to meet foregoing bands. At least 10% sand containing less than 5% material retained on the #4 sieve shall be used in all surface courses in combination with other materials, to meet the foregoing bands. Sand shall be either Class A, B or approved equal siliceous sand.

At least 35% of the fine aggregate shall be #10 stone or slag aggregate. Sand and stone screenings or sand and slag screenings may be combined but stone and slag screening shall not be combined. Slag screenings will not be permitted with stone coarse aggregate.

The fraction actually retained between any two consecutive screens shall be not less than 4% except that between screens #40 and #80 it shall be not less than 3%, and between screens #80 and #200 it shall be not less than 2%.

The percentage passing the 200 mesh screen is inclusive of any mineral dust present in the refined asphalt.

For base tapering 100% of the coarse aggregate shall pass the 1/2 inch screen.

For surface tapering 100% of the coarse aggregate shall pass the 3/8 inch screen.

Section C-32.34 Paving Plant Requirements.

(See Section C-25.23, 24, 25)

Section C-32.35 Plant Operation.

(See Section C-25.26)

Section C-32.36 Sampling and Testing.

1. Methods. All material shall be sampled and the properties enumerated in these specifications shall be determined in accordance with the following methods of the American

Society for Testing Materials.

(a) Sampling Mineral Aggregates. Standard Methods of Sampling Stone, Slag, Gravel, Sand, and Stone Block for Use as Highway Materials A.S.T.M. Designation: D-75.

(b) Sampling Bituminous Mixtures. Tentative Methods of Sampling Bituminous Paving Mixtures A.S.T.M. Designation: D-979.

(c) Sieve Analysis of Aggregates: Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates A.S.T.M. Designation: C-136.

(d) Fineness Modulus. The fineness modulus is the sum of percentages in the sieve analysis divided by 100 when the sieve analysis is expressed as cumulative percentages coarser than each of the following sieves: No. 100 (149-micron), No. 15 (297-micron), No. 30 (590-micron), No. 16 (1190-micron), No. 8 (2380-micron), and No. 4 (4760-micron). The sieve analysis shall be made in accordance with Section IV-1 (c).

(e) Sieve Analysis of Mineral Filler. Standard Method of Test for Sieve Analysis of Mineral Filler A.S.T.M. Designation: D-546.

Section C-32.37 Transportation and Delivery of Mixtures

(See Section C-25.27)

Section C-32.38 Spreading and Finishing

(See Section C-25.29)

Section C-32.39 Compaction

(See Section C-25.30)

ARTICLE C-33 PLAIN AND REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT

Section C-33.31 Description.

The concrete for pavement shall be composed of Portland Cement, fine aggregate, coarse aggregate and water proportioned and mixed as provided herein, and shall be constructed in one course of the depth, grade and cross section shown on the plans and Standards in accordance with these specifications.

Section C-33.32 Materials.

1. Water - Water used in mixing concrete shall be clean and free from strong acids, alkalis, oils, salts or organic material. When comparative tests are made with water of known satisfactory qualities, any indication of unsoundness or change in time of set or reduction in strength of more than 10% shall be sufficient for a rejection of the water. Sea water shall not be used for mixing concrete.

2. Portland Cement - Cement shall meet the requirements of the Standard Specifications for Portland Cement, A.A.S.H.O. Designation M-85, Type I or A.A.S.H.O. Designation M-134, Type Ia.

3. Fine Aggregate - The fine aggregate shall meet the requirements of the Standard Specifications for Fine Aggregate for Portland Cement Concrete, A.A.S.H.O. Designation M-6 with the following modifications and additions:

The soundness of the fine aggregate when subjected to five alternations of sodium sulphate, magnesium sulphate, or freezing and thawing soundness tests, shall not exceed a loss of 10% by weight. The fine aggregate failing to pass the minimum requirements for materials passing the No. 50 and/or 100 sieves may be used provided hydrated lime or other satisfactory inorganic fine material is added to correct for the deficiency in grade.

4. Coarse Aggregate - The coarse aggregate shall meet the Standard Specifications for Coarse Aggregate for Portland Cement Concrete, A.A.S.H.O. Designation M-80 with the following modifications and additions:

When coarse aggregate is subjected to five alternations of the sodium sulphate, magnesium sulphate or freezing and thawing soundness tests the weight loss shall not be more than 12%.

5. Air Entraining Admixture - The air entraining admixtures shall be either a Vinsol resin, Darex AEA or other agents approved by the A.A.S.H.O.

6. Preformed Expansion Joint Filler - The preformed expansion joint filler shall meet the Standard Specification for Preformed Expansion Joint Filler for Concrete, A.A.S.H.O. Designation M-58 or M-59.

7. Sub-Grade Paper - The paper shall meet the Standard Specifications for Sub-Grade Paper, A.A.S.H.O. Designation M-74.

8. Joint Sealing Compound - The joint sealing compound shall meet the Standard Specifications for Mixed Asphalt and Mineral Filler, A.A.S.H.O. Designation M-89 or the requirements of Federal Specifications for filler, Joint Sealing, Hot Pour For Concrete, SS-F-336.

9. Curing Materials -

(a) Cotton Mats - Shall meet the Standard Specifications for Cotton Mats for Curing Concrete, A.A.S.H.O. Designation M-73.

(b) Paper - The paper shall meet the Standard Specifications for Waterproof Paper for Curing Concrete, A.A.S.H.O. Designation M-139.

(c) Non-Bituminous Liquid Compounds - Non-bituminous liquid compounds shall meet the Standard Specifications for Non-Bituminous Liquid Compounds for Curing Concrete, A.A.S.H.O. Designation M-148.

(d) Burlap - Burlap used in curing concrete shall consist of two layers weighing at least seven ounces

per 10 square feet for each layer. It shall be closely woven fabric made of jute or hemp, and shall be in first-class condition, free from holes, dirt, clay, foreign matter or other substances that would interfere with its absorptive qualities. Burlap reclaimed from other usages than that of curing concrete shall be rejected. Burlap shall be furnished in whole strips of not less than 3 feet nor more than 6 feet in width, and of a length three feet longer than the width of the pavement.

Burlap for stone backfill shall conform to the requirements of the burlap for curing concrete, except that only new material will be accepted. Burlap reclaimed from any purpose shall not be used for covering stone backfill.

10. Form Oil for Concrete Framework - Form oil shall be a petroleum distillate free from water, asphaltic and other insoluble residues.

It shall be a non-staining paraffinic oil, and when tested in accordance with the ASTM methods, shall conform to the following requirements:

Color as determined by Union colorimeter, Max. 3
Sp. Gr. A.P.I. Min. 27.5
Pour Point, Max. 25° F.
Flash Point (open cup method) Min. 345° F.
Spec. Viscosity @ 100° F. (Saybolt-Universal)
105-120

If it is necessary in cool weather to thin the oil for application, it shall be done only by heating, but shall not be heated to more than 90° F.

11. Bar Reinforcement - Bar reinforcement metal for concrete structures and concrete roadways, inclusive of dowels and tie-bars, shall conform to the requirements for new Billet Steel Reinforcement Bars of the A.A.S.H.O., Designation M-31, with the following modifications:

- (a) The use of twisted bars is not permitted.
- (b) Only domestic deformed bars of intermediate grade or structural steel grade, made by the open hearth process from intensified heats, will be accepted. The use of only one grade of steel will be allowed on any one project.
- (c) Field test specimens shall be not less than 48 inches long.
- (d) The individual bar and lot tolerance will not be greater than 3½ per cent on bars above 3/8 inch, and 5 per cent on bars of 3/8 inch or under.
- (e) When deformed bars are specified, the form of the bar used must be approved by the Engineer and shall be such as to provide a net section of all points equivalent to that of a plain square or round bar of equal nominal size.

Section C-33.33 Composition of concrete mixtures.

1. In general, the consistency of concrete

mixtures shall be such that:

- (a) The mortar clings to the coarse aggregate.
- (b) The concrete is not sufficiently fluid to segregate when transported to the place of deposit.
- (c) The concrete, when dropped directly from the discharge chute of the mixer, shall flatten out at the center of the pile, but stands up and does not flow at the edges.
- (d) The mortar shall show no free water when removed from the mixer.
- (e) The concrete shall settle into place when deposited in the forms, and when transported in metal chutes at an angle of 30 degrees with the horizontal, it shall slide and not flow into place.
- (f) The upper layer of the set concrete shall show a cement film upon the surface, but shall be free from laitance.

The maximum slump shall be four (4) inches. Slump shall be measured in accordance with the Standard Method of Slump Test, A.A.S.H.O. Designation T-119.

2. Classes of Concrete - The classes of concrete to be used in the roadway or structure will be the class indicated on the design standards. Unless otherwise specified the following usage is intended:

Classes of Concrete

Class A - Paving, Curbs and Gutters and Mass Concrete.

Class A - Sidewalks and Thin Reinforced Structures.

MATERIALS FOR ONE CUBIC YARD OF CONCRETE

Class of Cement	Bags Minimum	Pounds Fine Aggregate	Pounds		Maximum** Water Gal. Per Bag of Cement	Minimum 28 Day Compressive Strength
			No. 3*	No. 57*		
A	6	1123	1270	834	5-3/4	3000 p.s.i.
B	6	1117		2040	6-1/4	2750 p.s.i.

* A.A.S.H.O. Designation

** Including Moisture in Aggregate

3. When air entrained concrete is used the amount of air entrained in the freely mixed concrete shall not be less than 3% nor more than 6% by volume as determined in accordance with the pressure methods described in Bulletin 19, June, 1947, of the Portland Cement Association or the standard method of test outlined in A.A.S.H.O., Designation T-121 or other method approved by the Engineer. If it is found impossible to produce concrete having the required air content with the materials and mixing procedures being used, the Contractor shall make such changes in the materials or mixing procedures, or pour, as may be necessary to insure full compliance with the requirements for air content in the

concrete.

Section C-33.34 Construction Methods.

1. General - Plain cement concrete for roadway paving shall be made on the site of the work except, however, central-mix, transit-mix, or truck-mix concrete may be permitted within the time limitations specified when previously authorized by the Engineer. In the event that central-mix, transit-mix, or truck-mix concrete is authorized, strict compliance with all of the provisions hereinafter specified shall be observed. The equipment and methods used shall provide means (1) to obtain exact weight of each batch, (2) to obtain the consistency specified with a minimum amount of water, (3) to obtain proper placing of the mixture in a condition of maximum density with no segregation of materials, and (4) to cure and finish the resultant pavement in accordance with the following requirements.

2. Handling and Storing - The handling and storing of concrete aggregates shall be such as to prevent segregation or the admixture of foreign materials at any time. Aggregates shall be stored on separate platforms at satisfactory locations of temporary plant. The coarse aggregate shall be separated into two sizes and the different sizes of aggregate shall be stored in a separate stock pile sufficiently removed from each other to prevent the material at the edges of the piles from becoming intermixed. All fine aggregates produced or handled by hydraulic methods shall be stockpiled or binned for draining at least twelve (12) hours before batching. The storage of such aggregates shall be separate at all times from materials stockpiled or binned less than twelve (12) hours at the time of batching. Stock piles of aggregates at temporary plant shall be built on planks not less than 2 inches in thickness laid close together, or on metal sheets not less than one-quarter ($\frac{1}{4}$) inch in thickness. The stockpile shall be built in horizontal layers of not more than four (4) feet each.

Stored cement shall meet the test requirements at any time after storage when a retest is ordered by the Engineer. Lumps appearing in stored cement shall be sufficient cause for rejection.

The cement shall be emptied from the shipping package directly into the skip of the mixer, or transported to the mixer in closed, separate compartments (equipped with waterproof covers), for each batch, or under certain conditions may be transported by placing the unopened shipping package upon the batched aggregates in trucks. The last mentioned method will be permitted only upon condition that:

- (a) Cement does not acquire moisture or dampness from aggregates during transportation.
- (b) Tarpaulins are available for protection in case of wet weather.

(c) Shipping packages are emptied into the aggregates of only those two (2) trucks which have arrived within fifty (50) feet of charging position at the mixer. In no case shall this period exceed ten (10) minutes prior to the charging of the mixer.

No cement shall be dumped on or in with the aggregates in batch boxes or trucks, except as above specified. All trucks, truck bodies, bulkheads, cement compartment, and other equipment or accessories used in the proportioning and transportation of concrete materials to the mixer, shall be so designed and operated as to insure the charging of the mixer, batch by batch, with the proper amounts of each material without over-spilling, inter-mixing of batches, or wasting. Any units, which in the opinion of the Engineer, do not operate satisfactorily shall be removed from the project until properly rebuilt or corrected.

When bulk cement is used, a screen shall be provided in the loading chute, in order to insure against the presence of burlap, paper, and other foreign materials in the concrete.

3. Measuring - All or any of the materials, except water, in batches of concrete shall be measured by weight. Unless otherwise permitted, the cement shall be packed in bags containing ninety-four (94) pounds per net weight. When the average net weight per bag, as determined by weighing fifty (50) bags, is less than ninety-four (94) pounds, the entire shipment may be rejected; but if accepted the mix shall be so adjusted that it will contain the quantity of cement per cubic yard which is specified. Batches shall be used which do not require fractional bags of cement.

The fine and coarse aggregates shall be weighed separately. Representative samples shall be taken and the moisture content determined before each size and kind of aggregate, in order that the proper corrections may be applied in weighing the aggregates. Slag shall be saturated with water on the stock pile, car, etc., before it is placed in the batching bin.

The equipment used for weighing materials shall provide convenient and positive means of determining the quantities in the batch of concrete, and means shall be provided for the addition or removal of small quantities of materials to obtain the exact weight per batch. The accuracy of the weighing equipment shall be within a range of error of not over one-half ($1/2$) of one (1) per cent for all loads. The equipment shall be arranged to permit and facilitate making changes in the batch amounts of aggregate, as necessitated and ordered because of changes in moisture content, and shall be arranged so as to permit the convenient removal of over-weight materials, either fine or coarse aggregate, from the weighing hopper. The equipment shall be so arranged as to afford the operator

convenient access to all levers and cables. The weighing beam and auxiliary weighing device shall be in full view of the operator when manipulating the gates which deliver materials to the weighing hopper. Clearance shall be provided between the scale parts and the hopper or bin structure to prevent displacement of the scale parts due to vibration, accumulation, or any other causes. In the case of weighing hoppers mounted on platform scales, the arrangement shall be such that the center of gravity of the total load on the scale is in the same vertical line as the center of the scale platform. The scales shall be either of the beam or the springless dial type.

On beam scales, a suitable device consisting of a graduated beam of dial shall be provided to register at least the last one hundred (100) pounds of either of the aggregates required for the batch. The value of the minimum graduation shall not be greater than five (5) pounds, in any type of scale. On beam scales the weighing position of the beam shall be horizontal and free and shall be equipped with a device to indicate the horizontal position clearly and accurately. Poises shall be so constructed that they cannot be easily removed from the beam and can be held firmly in place. No material softer than brass shall be used, and the material used shall be non-corrosive. The scales shall be designed so that all fulcrums, clevises, shackles and similar working parts which are exposed may readily be kept clean and in working order.

The mixer shall be equipped with water measuring device so designed that the accuracy of measurement will not be affected by variation in pressure of water supply line, and capable of accurate measurement to within one (1) per cent. There shall be no leakage, and if water measurement equipment ceases to deliver the proper quantity of the water, operation of the mixer shall be suspended at once until repairs have been made. The mixer shall be equipped with timing device which will automatically lock the discharge lever during the full time of mixing and release it at the end of the mixing period. This device shall be equipped with a bell adjusted to ring each time the lock is released. If the timing device becomes broken or out of order, the Contractor will be permitted to operate while same is being repaired provided he furnish an approved timepiece equipped with minute and second hands, and provided that each batch is mixed one and one-half (1½) minutes. If the timing device is not placed in good working order within seventy-two (72) hours, further use of the mixer shall not be permitted until repairs are made.

4. Mixing - A power-driven mixer of an approved type known as a batch mixer shall be used. The volume of concrete mixed per batch shall not exceed the standard capacity of the mixer as specified in the Concrete Mixer Standards adopted by the Mixer Manufacturer's Bureau and approved by the Associated General Contractors of America.

No materials for a batch of concrete shall be placed in the drum of the mixer until all of the previous batch has been discharged. Water shall be added at the time the materials are being run into the mixer. The inside of the drum shall be kept free from hardened concrete. The skip and throat of the mixer drum shall be kept clean and free of accumulations or encrustations of inert materials, and the admission of these materials to the mixer shall be cause for rejection of the batch in which they are included. After all the materials are in the drum, the concrete shall be thoroughly mixed for a period of not less than one (1) minute, and during this period the drum shall be in the mixing position and revolve at the speed for which it was designed, but shall not make less than fifteen (15) nor more than twenty-three (23) revolutions per minute. Such additional time shall be determined by the Engineer in setting the timing device or batch meter on the mixer so as to provide for the full mixing period. Such allowance shall not be less than seven (7) seconds. If a thorough mixing of the concrete, in the opinion of the Engineer, is not effected by this process, a sufficient number of additional revolutions at the same rate shall be given until a thorough mixing of the batch is secured. Pick-up and throw-over blades in the drum of the mixer which are worn down three-quarters (3/4) of an inch or more in depth must be repaired or replaced by new blades.

As required above all materials shall be admitted to the mixer simultaneously and thereafter no additional amount of any ingredient shall be admitted to the mixer, except by specific instructions of the Engineer or his representative for each individual batch. Such instructions shall not be given for more than three (3) consecutive batches after which the proportions of the mix shall be correct prior to the initial charging of the mixer, and further, such instructions shall not relax the following restrictions concerning the retempering of concrete.

Retempering of concrete by the addition of water shall not be permitted. The addition of water to the batch in the mixer, after ten (10) minutes have elapsed after the initial charging or the addition of water at any time after the concrete has been removed from the mixer, shall be construed as retempering. Batches of concrete prepared contrary to these restrictions shall be rejected and immediately removed from the project.

The concrete shall be mixed only in the quantity required for immediate use, and concrete not in place within one hour from the time the ingredients were charged into the mixing drum, or that has developed initial set, shall not be used.

5. Central, Transit and Truck Mixing - The plant shall include all necessary apparatus and appliances for accuracy weighing and controlling the amounts of the various component parts of each batch of concrete. Scales and

hoppers used for weighing the aggregates shall comply with the requirements hereinbefore specified. Means shall be provided for accurately determining the amount of moisture in the aggregates at all times. Cement shall be measured either by whole sacks or proportioned by weight by scales which are capable of maintaining an accuracy of one-half (1/2) of one (1) per cent under operation. The organization supplying the concrete shall have sufficient plant capacity and transportation apparatus to insure continuous delivery at the rate required by the Engineer for satisfactory operation. The delivery of concrete to the project shall be in such manner that the depositing of the concrete will be at a continuous rate, unless delayed by the placing operations. The interval between batches shall not be so great as to allow the concrete in place to partially harden, and in no case shall this interval exceed 20 minutes. The method and equipment used for transferring the concrete from the hauling units to the project shall be such as to insure the proper placing of the concrete. In the case of central mixing or transit mixing, the time interval between admission of the mixing water to the batch and final discharge of the concrete shall not exceed 45 minutes, and when production or delivery exceeds this time limit, the concrete produced shall be rejected and disposed of outside of the limits of the project. Wash water may be carried to the site of the work. It must be conveyed in a separate watertight compartment equipped with an approved gauge. All wash water shall be dumped before reloading the truck with concrete or concrete materials; no truck shall be loaded which contains freewater in the drum. The volume of materials per batch transported by conveyors or mixer trucks shall not exceed the manufacturer's normal rated capacity of the drum, exclusive of overload. This rated capacity shall be clearly indicated on a plate fixed to each truck body. All mixing and transporting equipment shall be approved by the Engineer prior to the starting of any work.

6. Central Mixing - When central mixing is used, the proportioning and mixing plant shall meet all the requirements herein specified, governing the handling, proportioning and mixing of concrete materials in a stationary mixer. The mixed concrete shall be conveyed from the central mixing plant to the site of the work in agitator trucks. The agitator shall consist of a closed, watertight revolving drum suitably mounted, capable of transporting and discharging the concrete without segregation. Speed of the drum shall not be less than two (2) nor more than six (6) revolutions per minute.

7. Transit Mixing - Transit mixing is the process of combining the separated aggregates, cement and water into a thoroughly mixed and uniform mass in transit mixer while in transit to destination. The transit mixer

shall be a closed water-tight revolving drum suitably mounted and fitted with adequate blades, capable of combining separated aggregates, cement and water into a thoroughly mixed and uniform mass, and of discharging the mixture without segregation. The transit mixer shall be equipped with an approved device for recording the number of revolutions made by the drum in the interim between the time of charging with all materials and the time of delivery of the concrete. This number shall be not less than 50 and not more than 150 at the mixing speed, nor more than 250 at the combined mixing and agitating speeds. Mixing speed shall be not less than four (4) revolutions per minute of the drum nor more than fifteen (15) revolutions per minute, depending on size of the mixer. Mixing water shall be accurately measured at the proportioning plant and added to the batch at the plant immediately after the addition of the cement. Mixing shall commence immediately after the addition of the water and shall continue without interruption until arrival at the destination.

8. Truck Mixing - Truck-mixing is the process of conveying the accurately-proportioned concrete materials in an unmixed state from the proportioning plant to the site of the work, and subsequent mixing in the conveying truck-mixer. The truck-mixer shall be a closed water-tight revolving drum suitably mounted and fitted with adequate blades capable of combining separated aggregates, cement, and water into a thoroughly mixed and uniform mass; and of discharging the mixture without segregation. The correct amount of mixing water shall be measured by either volume or weight at the loading plant and placed in a water-tight compartment equipped with an accurate, easily visible gauge. The truck-mixer shall be equipped with an approved device for recording the number of revolutions made by the drum in the interim between the time of charging with all materials, and the time of delivery of the concrete. This number shall be not less than fifty (50) and not more than one hundred and fifty (150) at mixing and agitating speeds. Mixing speed shall be not less than (4) revolutions per minute of the drums nor more than fifteen (15) revolutions per minute, depending on the size of the mixer.

9. Hand Mixing - Hand-mixing methods shall not be used.

10. Conditioning of Sub-Grade - After the sub-grade, as elsewhere prescribed in Section C-21.23 has been brought to line and grade, portions composed of unsuitable materials removed as directed, backfilled with approved additional material and rolled, and immediately prior to placing the forms, the subgrade shall be conditioned and trimmed to the exact shape, grade and cross-section required by the plans. A sub-grade machine of approved type will be permitted for use in which event the forms can be placed in advance of the exact condition-

ing and trimming to permit the use of the machine. Such conditioning and shaping shall be to the proposed width between side forms plus one extra foot on each side. Where the crown is to be warped to conform with the intersecting streets, storm water in-lets, etc., the sub-grade shall be accurately shaped to the required depth and cross section by means of hand and other tools approved by the Engineer. Grade stakes shall be driven to the proper elevation in the sub-grade at six (6) foot intervals in both directions. The concrete in such places may be finished by means of such hand tools, floats, shovels, spades, etc., under the direction of the Engineer, the tools being operated so as to thoroughly consolidate the concrete without segregation. Sub-grade shall be compacted by rolling at least one foot wider on each side than the concrete. Any excess material obtained from such preparations shall be deposited upon the adjacent shoulders or as directed. A sub-grade check templet, constructed to conform to the approved cross-section, shall be used as a final check, and any deviation from the required sub-grade surface shall be corrected. Should any correction to the sub-grade be needed, necessitating the addition of material, the added material shall be rolled with a hand roller weighing not less than five hundred (500) pounds. Following such correction, the check templet shall again be used. When the sub-grade is dry it shall be sprinkled with as much water as can be readily absorbed immediately in advance of placing concrete and shall also have been similarly sprinkled not less than eight (8) hours nor more than twenty-four (24) hours before concrete is placed thereon. When indicated on the plans, the sub-grade shall be covered with a layer of bituminous, impregnated sub-grade paper. The paper shall be laid the full width of the pavement with a lap of at least four (4) inches between adjoining strips. Proper care and attention shall be given the placing of the paper to prevent unnecessary tearing or breaking and to insure at least twenty-four (24) inches of paper being exposed at all times in front of the deposited concrete so no concrete may flow beneath the paper.

11. Forms and Form Setting - Forms for this work shall be the depth of the concrete, not less than ten feet in length, free from warp and of sufficient strength to resist all working stresses without springing or settling. Forms shall be made of steel of approved pattern and shall have a flat surface at the top not less than two inches wide. All forms used for supporting a finishing machine shall have a base not less than eight (8) inches wide, regardless of the depth of the concrete. Forms to be used for concrete which is to be finished by hand may have a base not less than six (6) inches in width.

Forms with 8" base for 8" concrete shall weigh not less than 150 lbs. per 10' length.

Forms with 8" base for 9" concrete shall weigh

not less than 160 lbs. per 10' length.

Forms with 6" base for 9" concrete shall weigh not less than 120 lbs. per 10' length.

Forms with 6" base for 8" concrete shall weigh not less than 115 lbs. per 10' length.

When tested with a straight edge no form shall show a variation of more than 1/8 of an inch in a 10-foot length from a true plane of the top or more than 1/8 of an inch from a true plane of face. Forms shall be provided with not less than three stake pockets to accommodate a one-inch diameter stake. Forms that become bent or deformed shall be immediately removed from the job until properly straightened and repaired.

Forms shall be joined neatly and tightly and staked securely with not less than three stakes per section. All wedge locks or other stake fastening devices shall be tight. Forms shall maintain proper grade and line under all working conditions. The entire base of forms shall be directly in contact with the finished sub-grade. Building of pedestals of earth or other materials upon which to rest the forms in order to bring them to the required grade is not permitted. Forms shall be set at least four hundred (400) feet in advance of the point of placing concrete on one side and at least six hundred (600) feet in advance on the other side, and shall be thoroughly cleaned and oiled before concrete is placed against them. After forms have been set they shall be tested for grade by the Contractor with an approved 10-foot straight edge and except on vertical curves any variations from the established grade shall be corrected by resetting forms.

12. Placing Concrete - The Contractor shall notify the Engineer at least twenty-four (24) hours in advance of placing the concrete. Concrete shall be deposited in successive batches on the sub-grade to the full width of the lane and shall be struck off with the finishing machine.

The finishing machine shall be an approved type of screed machine, having two screeds. Not less than three (3) men shall be at work at all times leveling, spading, and spreading the concrete in front of the finishing machine. Rakes shall not be used for handling concrete. The screed shall be adjusted so as to produce a completed concrete pavement of the crown and cross-section indicated on the plans. An experienced operator shall be employed to operate the finishing machine.

When constructing successive lanes, the wheels of the finishing machine, which rests on the previously completed concrete, shall be flat, without flanges, and the inside edge of the tread of the wheels shall not operate so close to the edge of the slab as to cause spalling or damage. The tread of the wheels shall be not less than three (3) inches in width. The wheels on the opposite side,

which operate on the steel side forms, shall have flanges on both sides.

13. Placing Reinforcing Steel - When reinforcement is required it shall be placed as shown in the plans.

All reinforcing metal must be kept clean and free from foreign material that will prevent the proper bond with the concrete. Welded sheet fabric and welded bar mats shall be furnished in flat sheets and shall be handled carefully during the placing, and kept straight until installed.

The reinforcement shall be placed as shown in the plans. The reinforcement shall be placed so that the extreme longitudinal member will be located not more than 3 inches from the edge of the slab section and the ends of all longitudinal members shall extend to within 2 inches of the ends of the slab sections. Adjacent sheets of welded fabric and welded bar mats shall be lapped not less than 12 inches when the lap is made at a right angle to the center line of the pavement. When sheets are permitted to be lapped parallel to the center-line, the lap shall not be less than 12 inches. The wire fabric or bar mats shall be wired together at all laps. The spacing between the wiring shall not exceed 24 inches.

To install welded fabric, or welded mats of reinforced bars, a layer of concrete shall be placed upon the sub-grade to such a depth that when struck off its surface will be at the elevation specified for the reinforcing metal to be installed. Each layer shall be struck off with a templet of a design and construction approved by the Engineer. When the reinforcing metal is properly placed on each layer, it shall be covered at once, before the bottom course has taken any initial set, with a layer of concrete so deposited and distributed thereover that the pavement shall have the required thickness and crown.

The Contractor will be required to furnish suitable metal supports of a type and design approved by the Engineer for all steel reinforcing bars. All steel reinforcing bars must be tied securely in place at all points where these bars cross other reinforcing bars.

Transverse expansion and contraction joints shall be constructed in the pavement according to the following schedule. The detail of the expansion and contraction joints will be indicated on the standard plan. This detail will include the spacing of joints in the roadway and adjacent to structures. Only that type of joint assembly shown on approved standard plan will be permitted.

14. Expansion Joints - Expansion joints shall be filled with an approved type of premoulded filler meeting the requirements of Section C-33.32. The expansion joint filler shall extend the full width of the pavement, and shall be flush with each edge of the slab. Not more than one (1) splice in any one (1) section of filler will be used in a traffic lane, and on widened curves. The

filler may be laced or clipped together before installation.

The joint assembly with filler inserted, is to be rigidly and firmly supported in full contact with the sub-grade by means of steel pins or other approved method. The use of any removable joint-installing devices, other than caps used for edging, or alignment plates, will not be permitted. A protecting metal channel with flanges of sufficient depth to be used satisfactorily will be placed over the top of the premoulded joint during the concrete operations. Concrete adjacent to joints shall be deposited on the sub-grade as near to the expansion and contraction joints as possible without touching them. It shall then be shoveled against both sides of the joint simultaneously, maintaining equal pressure on both sides. It shall be deposited to a height of approximately two inches more than the depth of the joint, care being taken that it is worked under the load transfer devices. The concrete shall not be dumped from the discharge bucket of the mixer directly upon or against the joints, nor shall it be shoveled or dropped on top of the load transfer devices. In placing the concrete against expansion and contraction joints and in operating a vibrator adjacent to them, workmen shall avoid stepping on or disturbing in any way the joints or load transfer devices, either before or after they are covered with concrete.

The concrete adjacent to the joint shall be compacted with a spud vibrator inserted in the concrete and worked along the entire length and on both sides of the joint. The vibrator shall not come in contact with the joint, the load transfer devices, or the sub-grade. If any of the dowel bars are displaced, they shall be realigned before the finishing machine passes over them.

After the concrete has been vibrated, the finishing machine shall be moved forward until the front screed is approximately eight inches from the joint. Segregated coarse aggregate shall be removed from both sides of and off the joint. The screed shall be lifted and brought directly above the joint, set upon it, and the forward motion of the finishing machine shall be resumed. When the second screed is close enough to permit the excess mortar in front of it to flow over the joint, it shall be lifted and carried over the joint. Thereafter, the finishing machine may be run over the joint without lifting the screed, provided there is no segregated coarse aggregate immediately between the joint and the screed or on top of the joint.

After the concrete has been placed on both sides of the joint and struck off, the installing bar or channel cap shall be slowly and carefully withdrawn leaving the premoulded filler in place. After the installing bar or channel cap is completely withdrawn,

additional freshly mixed concrete shall be worked into any depressions left by the removal of the installing bar and an edging tool with a one-fourth ($1/4$) inch radius is to be used to finish the concrete next to the joints. Any rough or torn places in the concrete shall be corrected. Particular care shall be taken to keep the concrete in exactly the same plane on the two sides of the joint.

The completed joint shall not be wider than one and one quarter inches ($1\frac{1}{4}$ ") for a three-quarter inch ($3/4$ ") joint. The point for determining the width shall be on the surface at the termini of the radii of the edging tool.

15. Contraction Joints

(a) Contraction joints shall be constructed similar to that described for expansion joints, except that the preformed filler will not be used. A plane of weakness will be provided over the previously set load transfer device by the use of a dummy joint tool which will form an opening in the concrete extending vertically downward for a depth of $2\frac{1}{2}$ " and for the full width of the traffic lane being poured. The resulting groove shall be normal to the surface of the completed slab and at right angles to the center-line of the roadway.

(b) After the dummy joint is removed from the groove, a plate having a thickness of three-eighths ($3/8$) inch and a width of two and one-half ($2\frac{1}{2}$) inches shall be inserted and, after belting, withdrawn slightly to permit the edging of the concrete on each side of the plate.

(c) After the concrete has stiffened sufficiently, the groove shall be cleaned and poured as soon as possible after completion.

16. Bulkhead Joints - When concreting is interrupted longer than forty-five (45) minutes, a bulkhead shall be placed. This bulkhead shall be of a design and constructed in accordance with the standard plan. Extreme care shall be used in striking off and finishing the surface to the face of the bulkhead. Joint assemblies will be installed at all bulkhead joints as called for above under contraction joints. Bulkheads shall not be placed closer than ten feet to any other joint, and if due to emergency, it is necessary to stop concreting for a sufficient period to require a bulkhead within ten (10) feet of a joint, the concrete shall be removed from the forms and wasted. An edging tool with a one-quarter ($1/4$) inch radius shall be used along the bulkhead across the surface of the pavement. When work is resumed, the freshly laid surface shall conform with the grade and cross section of the previously laid pavement.

17. Expansion-Contraction Joint Construction - Where specified, the expansion and contraction joint installation may be modified as follows:

Expansion joints meeting all of the specified requirements with the exception that they shall have a 1/2 inch opening instead of a 3/4 inch opening and will be installed at 30 foot intervals. Where this construction is used in concrete gutter and concrete curb installations, the dowel bars and load transfer devices will be omitted unless specified.

18. Center-line Joint - Where dual lane construction is permitted in one operation, a continuous plane of weakness shall be placed along the center-line of the pavement constructed in a manner similar to the contraction joint as to the method of installation and materials, inclusive of the edging of the concrete and the filling of the groove. Tie bars of deformed steel shall be installed as specified on the plans.

19. Longitudinal Construction Joint - The adjacent lanes of single lane construction shall be tied together by tie bars as specified on the plans. These bars shall be installed through holes made in the steel side forms so as to extend the required distance into each slab. The concrete first placed shall be used as a form for concrete placed adjacent but not until the period of 3 days is passed.

20. Finishing - Following the placing of the concrete, and after it has been screeded with a transverse finishing machine, the concrete shall be screeded longitudinally with a longitudinal finishing machine of an approved power type. This longitudinal screed shall be worked cross-wise so as to level any irregularities in the surface. The width of the working face of the screed shall not be less than six (6) inches. The concrete surface shall then be belted with a belt not less than twelve (12) inches in width and one-quarter (1/4) inch in thickness, nor less than two (2) feet longer than the width of the lane. This belt shall be worked with a combined longitudinal and crosswise motion until the surface has a uniform gritty texture. A belt from which the surface has been worn shall, at the direction of the Engineer, be immediately discarded.

After the concrete has been belted and straightened, but previous to any initial set, the surface shall be given the final finish by brooming with a steel street broom. The broom shall be gently pulled over the surface of the pavement from edge to edge by an operator walking back and forth on a bridge over the pavement. The handle shall be held almost vertical by the operator who allows the front of the broom to drag lightly over the surface, leaving slight ridges in the concrete. The broom shall be moved from one side of the pavement to the other with-

out interruption. The travel of the broom shall overlap a small amount. The brooming shall be perpendicular to the center-line of the pavement and so executed that the corrugations thus produced will be of uniform character and width and not more than one-eighth inch in depth, with the resulting surface free from objectionable depressions or projections that might be formed by improper handling. The brooming must be completed before the edges of the pavement and joints are rounded. The surface of the pavement shall be floated smooth for twelve inches longitudinally next to the curb edge of the slab.

When the finishing machine is run back over previously placed concrete after the concreting operation has been suspended for a sufficient time to permit the concrete to set, the finishing machine shall be supported by steel strips not less than two (2) feet long placed on the forms in such a manner that the wheel flanges will not touch or damage the concrete.

After the belting has been completed, and the concrete has taken its initial set, an edging tool with one-quarter (1/4) inch radius shall be used along each edge of the surface to prevent chipping of the edges in the removal of the forms. The edging of joints will be done at the same time and shall be done from the bridges. No kneeling planks will be permitted on the concrete. Particular care shall be taken to keep the concrete in the same plane on both sides of each joint thus edged.

21. Hand Finishing - Where permitted by the Engineer, hand finishing may be substituted for a finishing machine, according to the following methods.

The surface of the concrete shall be struck off immediately after it is placed and leveled by means of an adjustable steel template ten (10) inches wide and two (2) feet longer than the width of the pavement. A second adjustable steel template eight (8) inches wide and two (2) feet longer than the width of the pavement shall be used directly behind this template. Both templates shall be constructed and shall be finished to produce pavement of the desired cross-section and shall have sufficient strength to retain their shape under all working conditions. The templates shall be moved forward with a combined longitudinal and cross-wise motion fully resting at all times on the forms, during the operation, the distance between the two templates shall at no time exceed ten (10) feet. The templates shall be used until a true surface is obtained. While the concrete is being struck off with the first template, three or more men shall be at work leveling, spading and tamping the concrete in front of the template.

After the concrete has been struck off with the hand templates above described, the other finishing operations described above as following the screeding

LIBER 2 PAGE 104
by the finishing machines shall be carried out.

Experienced skilled operators and concrete finishers shall be employed. Any laxity in this respect shall be cause for immediate suspension of concreting operations.

Where the pavement is to be laid adjacent to railway tracks, or around structures, no concrete shall be placed until the tracks and structures have been set to the required grade and aligned.

Curves in the pavement where indicated on the plans as being widened and banked or when so designated by the Engineer shall be constructed as follows: Forms will be set the standard pavement width and raised or lowered from the grade of the center line as directed by the Engineer so as to produce the desired super-elevation. The sub-grade planer and finishing machine will operate over this section just as on a normal section. At the time of setting forms there will be additional lines of forms set on the inside and outside of the curves if required to provide the necessary additional width. Following the passage of the finishing machine and the checking of the surface for trueness, the intermediate forms will be immediately removed, the edges of the concrete along the line of these intermediate forms broken down with shovels, and the additional space filled with concrete to the depth of the edge of the pavement. This concrete will be consolidated with hand tools and floated with a 10-foot longitudinal float. It will then be checked for trueness, corrected, if necessary, and the entire pavement given the final finish. The requirements for all form setting are those specified under "Forms and Form Setting," except that one section of outside forms may be omitted at each end of the widened section until after the final finishing machine has passed and the intermediate form removed.

22. Curing - Concrete will be cured by one of the following methods. The choice of method is optional with the Contractor.

Method a: Burlap: As soon as it may be done without injury to the concrete, the pavement shall be covered with burlap meeting the requirements of Section C-33.32. This burlap shall be placed in two layers. Each layer shall be lapped at least 6 inches. Previous to the application of the burlap to the concrete, the burlap shall be thoroughly wetted and shall be kept wet continuously for a period of 72 hours.

As soon as the forms have been stripped from edge of the slab, earth shall be banked against the slab for the full depth of the pavement and for a width of at least one (1) foot.

Method b: Wet Earth: For the first 24 hours curing shall be done as under Method a, after which a 3 inch layer of earth, which shall be free from aggregate or stone larger than 1 inch, shall be spread over the entire surface and kept wet for a period of 72 hours, after which no further curing will be necessary.

As soon as the forms have been stripped from the edge of the slab, earth shall be banked against the slab for the full depth of the pavement and for a width of at least 1 foot.

Method c: Colorless Curing Compound: This curing material meeting the requirements of Section C-33.32 shall be applied to the surface of the concrete as outlined, except that the rate of application shall be as follows:

Min. per square yard	Max. per square yard
.034 gallons	.04 gallons

The compound shall be applied with an approved hand or motor driven spray operated at a pressure of not less than 40 pounds nor more than 60 pounds per square inch.

When using Method c, the concrete shall be protected at all expansion and contraction joints by covering the joint for the entire width of the pavement slab by placing a strip of sub-grade paper 6 inches wide over the joint to prevent the curing agent or dirt from entering the groove, thus preventing adhesion of the poured rubber or bituminous joint filling compound. This paper shall be allowed to remain in place until the joint or groove is poured.

Method d: Cotton Mats: As soon as it may be done without injury to the concrete surfacing, the pavement shall be covered with cotton mats meeting the requirements of Section C-33.32. The mats shall be wetted and shall be kept wet for a period of seventy-two (72) hours, after which no further curing will be necessary.

As soon as the forms have been stripped from the edge of the slab, earth shall be banked against the slab for the full depth of the pavement and for a width of at least one (1) foot.

Method e: Paper: Paper for curing shall meet the requirements of Section C-33.32. As soon as practicable, without injury to the finished concrete surface, the concrete shall be covered with a curing paper. The paper shall be rolled out and held in place temporarily by a windrow of earth placed just outside of the forms. At the junction between the blanket units, the paper shall be lapped approximately twelve (12) inches and held with a bank of earth. On removal of forms, the paper shall be brought down over the slab side and held with a continuous bank of earth. The paper shall be left in place for a period of seventy-two (72) hours,

after which no further curing shall be necessary.

23. Surface Test - The entire surface shall be checked with an approved metal straight edge 10 feet in length, following the belting, and any deviation from the general surface shall be corrected at once. The surface shall be checked again immediately after the removal of the burlap, where an initial burlap covering is used, or at the end of 72 hours, where 72 hour covering is used. The 10 foot straight edge shall be equipped with blocks at each end exactly 1/8 inch in height, so as to support the checking edge above the concrete pavement. The straight edge shall be placed at several points across the pavement parallel to the center line, and shall be advanced in 5 foot steps. If, at any point, the concrete touches the straight edge when supported on blocks, the high spot shall be corrected by grinding or rubbing the surface. This grinding or rubbing shall be conducted carefully so as to avoid loosening coarse aggregate or otherwise damaging the slab.

24. Protection of Concrete - The Contractor shall erect and maintain suitable barricades and employ watchmen, as required, to exclude traffic from the newly-constructed pavement for the period herein prescribed, but these barriers shall be so arranged as not in any way to interfere with or impede public traffic on any lane intended to be kept open, and necessary signs shall be maintained by the Contractor clearly indicating the open lanes to the public. When it is necessary to provide for traffic across the pavement, the Contractor shall construct immediately after the finishing of the concrete, the necessary bridges over the pavement clear of the forms and at least 3 inches clear of the concrete, and sufficiently strong to carry the traffic. He shall maintain these bridges for a period of 3 days, after which time he can remove same and cover the concrete with a 6 inch mat of earth, which must be maintained for the full depth until the concrete has attained the required strength, as set up in these specifications.

Any part of the pavement damaged by traffic or other causes occurring prior to its final acceptance, shall be repaired or replaced in a manner satisfactory to the Engineer. The Contractor shall protect the pavement against both public traffic and the traffic caused by his own employees and agents. The pavement shall be so protected until the required strength has been attained.

25. Sealing Joints - All joints shall be sealed as soon as practicable after they have been made, and in no case shall the concrete surfacing be opened to traffic until the joints are sealed.

An approved and specified type of joint sealing compound shall be used complying with the materials requirements of these specifications.

Extreme care shall be exercised in the sealing of joints to make them wholly impervious to water and to prevent the sealing compound from spreading over the surface of the pavement for a width of more than 1/4 inch on either side of the joint or groove.

26. Tolerance in Pavement Thickness - After the pavement is placed and before final acceptance, the thickness, as determined by measuring cores cut from the pavement or direct measurements of the edge thickness, shall not be deficient more than 1/4 inch from the required thickness.

Where measurements of cores indicate the pavement is more than 1/2 inch deficient in thickness, the pavement shall be replaced with pavement of specified thickness.

It is agreed that one core is representative of the pavement between 30 foot expansion or contraction joints for purpose of determining the thickness.

27. Cold weather Concreting - Except by specific written authorization from the Engineer, concreting operations shall not be continued when a descending air temperature in the shade and away from artificial heat falls below 45° F. nor resumed until an ascending air temperature in the shade and away from artificial heat reaches 40° F.

If concrete is to be placed when the temperature of the air falls below 45° F., an approved type of flame thrower shall be connected to the mixer drum, and the temperature of the concrete, when deposited, shall not be less than 60° F. No materials containing frost shall be used. Bags of cement or fine aggregate containing lumps or crusts of hardened material shall not be used. No concrete shall be placed on a frozen sub-grade.

During cold weather, when the air temperature may be expected to drop below 40°F., sufficient supply of hay, straw, or other material suitable for covering shall be provided along the line of the work, and at any time when the air temperature may be expected to reach the freezing point during the day or night, the material specified herein shall be spread to a sufficient depth to prevent freezing, and shall remain for not less than five days, or until the concrete has hardened thoroughly. The use of such hay or straw does not take the place of burlap or other covering specified herein, but shall be applied in addition to the covering.

ARTICLE C-34 BITUMINOUS SURFACE TREATMENT

Section C-34.31 Description.

This item shall consist of three applications of bituminous material interspersed and covered with aggregate to serve as a wearing course for a newly constructed base course.

Section C-34.32 Materials.

1. The bituminous materials shall be of the grade and type specified in Section C-34.33. The MC-30, MC-70, and MC-25 shall meet the requirements of A.A.S.H.O. Standard Specifications for Cut-Back Asphalt, Designation M-81.

2. The aggregates shall be crushed stone meeting the requirements of the A.A.S.H.O. Standard Specifications for Crushed Stone for Bituminous Macadam Surface Course, Designation M-78. The gradation of aggregates are to be No. 3, No. 4, and No. 7 corresponding to the A.A.S.H.O. Standard Specifications for Standard Sizes of Coarse Aggregates for Highway Construction, Designation M-43.

Section C-34.33 Construction Methods.

1. Equipment - The equipment used shall meet the requirements of Article C-23.

2. Application of Prime Coat - The prime coat shall be applied in accordance with Section C-23.28, using the same bituminous material, and at the same rate of application.

3. Spreading Coarse Aggregate - The No. 3 aggregate shall be spread from a mechanical spreader approved by the Engineer at a rate of fifty (50) pounds per square yard. It shall then be leveled with a long base blade maintainer or drag until it presents a smooth even surface. After this operation, the aggregate shall then be rolled with a three-wheel roller weighing not less than 10 tons.

4. Application of Bituminous Material - After rolling, RS-3K asphalt or RC-3000 shall be applied at the rate of three-tenths (0.3) to five-tenths (0.5) gallons per square yard as directed by the Engineer. Bituminous material shall not be applied to any stretch of roadway when aggregate is not immediately available. All operations shall be suspended early in the day to permit covering of all treated portions before the close of the working period for the day. No traffic nor equipment shall be allowed to pass over the freshly spread bitumen until it has been covered with aggregate.

5. Application of Dry Aggregate - Immediately following the above application of bituminous material, the surface shall be covered uniformly with 25 to 30 pounds per square yard of No. 4 aggregate. The aggregate

gate shall be spread by a mechanical spreader. The surface shall then be rolled and broom dragged to fill all the surface voids. During the operation, additional No. 4 aggregate shall be used if necessary to prevent picking up by the roller. The operation shall be continued until the aggregate is thoroughly set in the bituminous binder.

6. Application of Seal Coat - After the above operation is completed another application of bituminous material of the same type and grade as previously used shall be applied at the rate of three-tenth per square yard. The bituminous material shall then be covered with 20 pounds per square yard, of No. 7 aggregate. It shall be broomed and rolled until the surface is fully compacted and bonded. Loose material on the surface shall be swept into the voids and also compacted.

7. During all the spreading and rolling operations, care shall be exercised to maintain a smooth, easy riding surface true of line, grade and cross section.

8. Traffic shall be detoured until the Surface Treatment is complete.

DIVISION C

PART IV

STRUCTURES

ARTICLE C-41 PIPE DRAINS AND CULVERTS

Section C-41.41 Description.

The construction of pipe drains, and culverts shall consist of laying and joining sections of pipe of the diameters and description specified or directed, true to the lines, grades and dimensions given and in conformity with the requirements of the Standards and these Specifications.

Section C-41.42 Materials.

1. Corrugated Metal Culvert Pipe - Refer to A.A.S.H.O. Designation M-36.
2. Reinforced Concrete Culvert Pipe - Refer to A.A.S.H.O. Designation M-41.
3. Class A Concrete - Refer to Section C-33.33 of these Specifications.
4. Mortar - Refer to A.A.S.H.O. Designation M-45 for sand. Refer to A.A.S.H.O. Designation M-85 Type I for cement. Refer to Section C-33.32 of the Specifications for water.

Section C-41.43 General requirements.

1. The Contractor shall excavate, protect and refill all excavations that may be necessary for completing the work to be done. Excavations shall be in open cut except where and to such extent as the Engineer may authorize or direct that the same be done in tunnel. Trenches may be, in general, excavated either by machinery or by hand as the Contractor may elect, provided, however, that the Engineer shall be empowered, wherever he shall decide that such necessity exists, to direct that hand excavation shall be employed.

2. Removal and Storage of Surface Materials.
The Contractor shall grub and clear the surface and remove all surface materials, of whatever nature, over the line of the trench and the site of other structures and areas to be graded; and he shall properly store, guard and preserve such of said materials as may be required for use in backfilling, resurfacing, repaving or for other purposes. All the curb, gutter and flagstones and all paving material which may be removed, together with all materials taken from the trenches, shall be stored in such parts of the roadway or such other suitable place and in such manner as shall be approved or directed.

3. Width and Depth of Trenches - Trenches shall be excavated to the necessary width and depth as directed. Trenches under paving and trenches at all points below the top of the pipe to be laid therein shall be in accordance with standard details. Where sheeting is used the maximum width below the top of the pipe, as described above, shall be measured between the interior faces of the sheeting as driven, but in no case shall stringers or whaling strips be so placed as to interfere

with the proper tamping of the earth under and around the pipe. The sides of the trenches shall be practically plumb and under no circumstances will they be permitted to be sloped, except with the written approval of the Engineer. Bell-holes shall be excavated in the bottoms and sides of trenches wherever necessary to permit the proper making of joints.

4. Length of Open Trench - No greater length of trench in any location shall be left open, in advance of the completed structure placed therein, than shall be authorized or directed. The Engineer shall be empowered at any time to require the refilling of open trenches over completed pipe lines, if in his judgment such action is necessary.

If work is stopped on any trench for any reasons except by order of the Engineer, and the excavation is left open for an unreasonable length of time in advance of construction, the Contractor shall, if so directed, refill such trench and shall not again open said trench until he is ready to complete the structure therein.

The excavation of all trenches shall be fully completed at least 20 feet in advance of pipe laying, unless otherwise authorized.

5. Accommodation of Traffic - During the progress of the work, sidewalks and crossings shall be kept open for the passage of pedestrians, unless otherwise authorized. Streets shall not be unnecessarily obstructed, and unless the Engineer shall authorize the complete closing of a street, the Contractor shall take such measures as may be necessary to keep the street open for traffic.

The Contractor shall construct and maintain such adequate and proper bridges over excavations as may be necessary or directed for the purpose of accommodating pedestrians or vehicles.

6. Accommodation of Drainage - Gutters and drains shall be kept open at all times for surface drainage. No damming or ponding of water in gutters or other waterways will be permitted, except to a limited extent where the Engineer shall consider the same necessary or allowable.

7. Pumping - The Contractor shall keep all excavations free from water while structural work is in progress, and to such extent as may be necessary while excavations work alone is being carried on. He shall provide for the disposal of the water removed from excavations in such manner as shall not cause injury to the public health, to public or private property, or to any portion of the work completed or in progress, or any impediment to the use of the streets by the public.

8. Rock - Unless otherwise directed, rock shall be fully removed to a depth at least six (6)

inches below the outer bottom of the pipe. Rock shall be removed sufficiently at joints so that they may be properly made. The space below the outer bottom of the pipe shall be filled with selected clean earth free from rock or stone, and thoroughly tamped.

9. Tunneling - Tunnels for the laying of pipe lines shall be of sufficient size to allow at all points the proper compacting of the refill around them. Tunnels shall be timbered where and to such extent as may be necessary, in accordance with the approved methods. Where rock is encountered in tunnel, it shall be fully taken out to the lines prescribed by the Engineer. All methods of tunneling used shall be subject to the approval of the Engineer.

10. Bracing or Sheeting - The Contractor shall support the sides and ends of all excavations, wherever necessary or directed, with braces sheeting, shores or stringers of the quality and character as directed. All timbering shall be put in place or driven by men skilled in such work and shall be so arranged that it may be withdrawn as refilling proceeds, without injury to the structures built or to any road bed for adjacent structure of property. If, in the opinion of the Engineer, the material furnished for timbering excavations is not of proper quality or sufficient size, or not properly placed to insure the safety of the work or of adjacent structures or property, the Contractor shall, upon notice, forthwith procure satisfactory timbering and place said timbering in a satisfactory manner; and upon his failure so to do, the work may be ordered stopped until said notice shall have been complied with.

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All timbering in excavations shall be withdrawn as the refilling is being done, except where and to such extent as the Engineer shall order in writing, that said timbering be left in place or where he shall permit the same to be left in place. The Contractor shall cut off any sheeting ordered left in place and shall remove the material cut off.

Wherever necessary, in quicksand or soft ground or for the protection of any structure or property, sheeting shall be driven to such a depth below the bottom of the trench as may be required or directed.

11. Test Pits - Test pits shall be dug by the Contractor wherever directed. Their depth and size shall be as required by the Engineer. Test pits may be dug by the Contractor, without being directed to do so, along the lines of the trenches, as shown on the drawings, in advance of the excavation for the purpose of satisfying himself as to the location of underground obstructions or conditions.

12. Preparation of Foundation - The Contractor shall complete excavations in earth as nearly as practicable to the neat lines of the structure to be built therein. All irregularities and cavities, whether in earth or rock excavations in the bottoms of trenches or tunnels shall be filled up to the required level with

clean earth or other approved material, firmly compacted before pipe lines are laid therein.

Wherever directed, the Contractor shall use gravel in filling below subgrade, or he shall construct a foundation of concrete. Concrete foundation shall be composed of concrete of the class prescribed and built to the lines given.

13. Backfilling - The Contractor shall re-fill all excavations as rapidly as practicable after the completion of structural work therein or after the excavations have served their purpose. The method of backfilling and the materials used shall conform to Article C-4 of the Specifications.

No ashes, putrescible refuse, large stones or other material of an unsatisfactory character shall be used in refilling; and the Contractor shall not permit excavations to be used as a dumping ground for refuse.

14. Furnishing and Placing Topsoil - Areas shown on the plans or Standards to be seeded or sodded and other areas as may be designated by the Engineer shall be covered with a uniform layer of topsoil to the depths shown, specified or directed. Topsoil shall be of a quality equal to the quality of the existing topsoil in the immediate vicinity of the work. The topsoil may be stripped over areas to be excavated and be stored and protected for reuse.

If additional topsoil is required it shall be furnished by the Contractor from sources approved by the Engineer.

15. Seeding and Sodding - Seeding or sodding will be required in areas shown on the plans or Standards or other areas as may be designated by the Engineer.

16. Responsibility for Condition of Excavation - The Contractor shall be responsible for the condition of all excavations made by him. All slides and caves shall be removed at whatever time and under whatever circumstances they may occur.

The neglect, failure or refusal of the Engineer to order the use of bracing or sheeting, or a better quality or larger sizes of timber, or to order sheeting, bracing or shoring to be left in place or the giving or failing to give orders or directions as to the manner or methods of placing or driving sheeting, braces or shores, shall not in any way or to any extent relieve the Contractor of any responsibility concerning the condition of excavations or of any of his obligations.

17. Obstructions Shown on Drawings - Certain information regarding the reputed presence, size, character and location of existing underground structures will be shown on the plans. There is no certainty of the accuracy of this information and it shall be con-

sidered by the Contractor in this light. The locations of underground structures shown may be inaccurate and other obstructions than those shown may be encountered. The Contractor shall hereby distinctly understand that the County is not responsible for the correctness or sufficiency of the information given.

The information shown shall not in any way or to any extent relieve the Contractor of any responsibility concerning the protection and preservation of existing structures.

18. Removal of Obstructions - Should the position of any pipe, conduit, pole or other structures, above or below ground, be such as to require its removal, realignment or change due to work to be done in accordance with the plans, the Contractor shall be responsible for notifying the owners of such obstruction to make the necessary adjustments. Upon encountering such obstruction, the Contractor shall cease all operations until such time that, in the opinion of the Engineer, operations may be resumed.

The Contractor shall break through and reconstruct, if necessary, the invert or arch of any sewer, culvert or conduit that may be encountered, if said structure is in such position, in the judgment of the Engineer, as not to require its removal, realignment or complete reconstruction.

The Contractor shall not interfere with any persons, firms or corporations, in protecting, removing, changing or replacing their pipes, conduits, poles or other structures, but he shall suffer said persons, firms or corporations to take all such measures as they may deem necessary or advisable for the purpose aforesaid, and the Contractor shall thereby be in no way relieved of any of his responsibilities.

Section C-41.44 Construction Methods

1. Reinforced Concrete Culvert Pipe and Fittings (Storm Drains) (RCCP) - Concrete pipe shall be reinforced concrete made for tongue and groove jointing and in lengths not less than four (4) feet or greater than eight (8) feet.

Other types of joints will be considered by the Engineer for use in the work, provided the Contractor furnishes evidence, satisfactory to the Engineer, that the joints are equal or better than those specified.

Pipe used within the road right-of-way shall be manufactured in accordance with Specification C-76-60T or C-507-63T of the American Society for Testing Materials; cement shall be in accordance with ASTM Standard Specification C 150 Type 1. Pipe seconds, with the approval of the Engineer and inspection prior to its use, may be enclosed in storm drainage work outside the road right-of-way.

Unless otherwise specified, concrete Y-branches,

tees, bends, and other special fittings shall be manufactured in accordance with the same specification as the pipe with which they are used.

The construction of Y-branches or tees and bends shall be to the angle and radius shown and the interior shall permit the smooth and even flow of liquid.

At the Contractor's option, he may be permitted to use formed brick masonry Y-branches or T-branches for concrete fittings as shown in the Standard Details.

Storm drain joints for concrete pipe shall be cement mortar unless otherwise approved by the Engineer. Jointing mortar shall be mixed in proportion by volume of one (1) part cement to two (2) parts of sand. All tongue and groove type of joints shall be made as follows:

(a) (For pipe 36 inch and smaller)

The first pipe shall be bedded to establish line and grade with the groove upstream. A shallow excavation shall be made underneath the pipe at the joint, this space to be filled with mortar, composed of one (1) part of Portland cement and two (2) parts of sand, onto which the end of the second pipe beds when laid. The groove end of the first pipe must be thoroughly cleaned with a wet brush and a layer of soft mortar applied to the lower half of the groove. The tongue end of the second pipe must be thoroughly cleaned with a wet brush and while in a horizontal position, a layer of soft mortar applied to the upper half of the tongue. The tongue end of the second pipe shall then be inserted into the groove end of the first pipe until the mortar is squeezed out on the interior and exterior surfaces. The interior surface of the pipe at the joint shall then be brushed smooth.

(b) (For pipe forty-two (42) inch and larger)

The Engineer may at his discretion permit pipe to be placed into position without mortar in joint. The Contractor before jointing pipe shall provide a shallow excavation underneath the pipe at the joint, this space to be filled with mortar composed of one (1) part of Portland cement and two (2) parts sand, onto which the end of the second pipe beds when laid. The groove end of the first pipe and tongue end of the second pipe must be thoroughly cleaned with a wet brush and then placed in position. After the pipe is in position the interior and exterior surface of the pipe at the joints shall be completely filled with mortar.

Other methods of jointing pipe will be given consideration by the Engineer for use in the work, provided the Contractor furnishes evidence, satisfactory to the Engineer, that the proposed method is equal to or better than the specified methods, and further, provided that the proposed method has been successfully used and that the joint has previously been manufactured by the company from whom the Contractor proposed to purchase pipe.

2. Corrugated Metal Pipe and Pipe Arches - Corrugated metal pipe shall conform to the requirements of AASHO M 36.

Sizes, shapes, types, base metal, gauges, bituminous coating and paved inverts shall be shown on the drawings or directed by the Engineer.

All joints and couplings shall be in accordance with the Manufacturer's recommendations.

3. Structural Corrugated Galvanized Plate Pipe and Pipe Arches - Plates shall consist of structural units of galvanized corrugated metal. The corrugations shall run at right angles to the longitudinal axis of structures and shall measure six (6) inches from crest to crest, with a tolerance of one-quarter ($\frac{1}{4}$) inch. The corrugations shall have a depth of not less than two (2) inches. Either longitudinal or circumferential seams shall be staggered, and seams shall be connected by hot dip galvanized bolts not less than eleven-sixteenth ($\frac{11}{16}$) inch in diameter. Bolt heads and nuts or washers shall be specially designed to provide even and uniform bearing on the corrugated surfaces.

Where mill or factory inspection is employed, gauge shall be determined by weight of flat plates before corrugating.

4. Laying Pipe - Pipe shall be carefully handled and lowered into the trench. In laying pipe, special care shall be taken to insure that each length shall abut against the next in such a manner that there shall be no shoulder or unevenness of any kind along the inside of the bottom half of the pipe line. No wedging or blocking will be permitted in laying any pipe unless by written order or permission from the Engineer.

Before joints are made, each pipe shall be well bedded on a solid foundation, and no pipe shall be brought into position until the preceding length has been thoroughly embedded and secured in place. Any defects due to settlement shall be made good by the Contractor at his own expense. Bell holes shall be dug sufficiently large to insure that the pipe is firmly bedded on the full length of the barrel.

Proper and suitable tools and appliances for the safe and convenient handling and laying of pipes shall be used.

The pipes shall be thoroughly cleaned before they are laid and shall be kept clean until the acceptance of the completed work. The open ends of all pipe lines shall be provided with a stopper carefully fitted, so as to keep dirt and other substances from entering. This stopper shall be kept in the end of the pipe line at all times when laying is not in actual progress.

Whenever a pipe requires cutting, to fit into the line or to bring it to the required location, the work shall be done in a satisfactory manner so as to leave a

smooth end, and without extra compensation.

All concrete required to support and reinforce Y-branches and bends shall be placed as shown in Standard Detail Drawings or as directed.

The excavation in which pipe is being laid shall be kept free from water and no joint shall be made under water. Water shall not be allowed to rise in the excavation until the joint material has received its set. The greatest care shall be used to secure watertightness and to prevent damage to, or disturbing of, the joints during the refilling process, or at any other time. After pipes have been laid and the joints have been made, there shall be no walking on or working over them, except such as may be necessary in tamping, until there is a covering at least two feet in depth over their top, or as shown on the Standard detail drawings. After the joint material has received its set, refilling of the trench shall be commenced by depositing and ramming earth in layers not more than six (6) inches thick, under, around, and over the pipe to a point not less than two (2) feet in depth over the top thereof, or as shown on the standard detail drawings, after which refilling of the remainder of the trench may proceed in the manner hereinbefore provided in these specifications.

ARTICLE C-42 INLETS AND MANHOLES

Section C-42.41 Description.

This specification covers the construction and installation of inlets and manholes, as shown on the approved plans.

Section C-42.42 Materials.

1. Brick - All brick shall conform to the Standard Specifications for Sewer Brick, ASTM Designation on C32-58 for Grade MA, except that the maximum absorption for the average of six (6) bricks shall not exceed ten (10) per cent.

The Contractor shall furnish the Engineer with six (6) bricks of the character he proposes using, at least one week before any bricks are delivered for use.

2. Cement - Cement shall be in accordance with the latest Standard Specifications for Portland Cement, ASTM Designation C-150 Type 1.

3. Mortar Sand - All sand for cement mortar shall be composed of sharp, angular, silicious grains graded as follows: 100% passing #8 sieve, 15%-40% passing #50 sieve, 0%-10% passing #100 sieve and 0%-5% passing #200 matter or other impurities. Sand containing more than 5 per cent by weight of foreign material shall not be used.

When required, the Contractor shall submit a sample of at least 100 lbs. of the sand he proposes using. This will be retained in the office of the Engineer as a standard for comparison during the progress of the work, and all sand used shall be equal in quality to the accepted sample.

Sand obtained from the excavation shall not be used, except at such places, to such extent, and under such conditions, as may, in writing, be allowed by the Engineer.

4. Mortar - Unless hereinafter specified otherwise, all mortar shall be composed of cement and sand of the character above specified. For brick masonry, the proportion by volume shall be one part of cement to two parts of sand.

Mortar shall be mixed in small batches freshly for the work in hand. Tight boxes or platforms, made for the purpose, shall be used. The sand and cement shall be thoroughly mixed dry, in the proper proportions, until a uniform color has been produced, whereupon a moderate dose of water shall be added, so as to produce a stiff paste of the proper consistency.

Section C-42.43 Construction Methods.

1. All brickwork shall be laid by competent mechanics and any workman not deemed to be such by the Engineer shall be removed from the work at once.

All brick shall be laid in a full bed of mortar with all vertical and horizontal joints filled solid with mortar.

Joints shall not be less than three-eighths ($3/8$) inch or more than one-half ($1/2$) inch wide.

No brickwork shall be laid when the temperature is below forty (40) degrees or when the indications are for lower temperatures within twenty-four (24) hours, unless protection of brickwork is approved by the Engineer. The Contractor shall take such measures as may be approved to prevent brickwork from being exposed to freezing temperatures for a period of not less than five (5) days after laying.

Special care shall be taken in laying brick in inverts of manholes, inlets, transition sections, junction chambers, brick wyes and similar structures to insure a uniform flow of water through the sections. In such locations joints shall not exceed three-sixteenth ($3/16$) inch in thickness and each brick shall be laid in full mortar joints on bottom side and end performed in one operation; no grouting or working in of mortar after laying the brick will be permitted.

The outside of all brick work shall be plastered with cement mortar one-half ($1/2$) inch thick.

In addition to the above, all Sanitary Manholes shall be water-proofed with two (2) applications of a Waterproof Bitumastic Compound (Inertol Standard or approved equal) from the bottom of manhole frame to the base of the manhole.

2. Manholes of brick or of brick and concrete shall be built at such points on the pipe lines, and of such form and dimensions, as are shown on the drawings or

as may be directed. The masonry shall be carried up to the elevations shown or as the Engineer shall require. Channels for receiving and passing water shall be formed in the bottom of manholes, as shown, or directed. All such channels shall be lined with brick, or with brick and split vitrified pipe. Channels shall slope smoothly and evenly from the main pipe entering the manhole to the outlet pipe.

Wider or deeper foundations than shown on the detail drawings for manholes shall be built of concrete masonry, wherever directed.

Manholes shall be built as pipe laying progresses and the Engineer may stop work entirely on laying pipe until the manhole just passed has been completed.

Where Precast Reinforced Concrete Manholes are specified, they shall meet the requirements of A.S.T.M. Specification C-478-61T. The Manholes shall be constructed in accordance with the Manufacturers recommendations.

In constructing manholes, accurate templates, set at a height to which the manhole is to reach, may be required. From such templates not less than four (4) lines shall be drawn, to serve as guides for the brickwork.

Joints on the inside of manholes shall be neatly struck and pointed. The use of a reasonable number of bats originating on the work will be allowed.

All concrete used in manholes shall be Class "A" as specified in the Article 33.

3. Drop connections of the various types shown in the Standard Details shall be built by the Contractor where shown on the drawings or where directed.

4. Channels for future extensions shall be built into manholes where shown on the drawings or where directed.

5. Manhole frames, covers and steps shall be furnished by the Contractor and set by him as the work progresses. Frame shall be well bedded in mortar. Steps shall be spaced vertically and staggered as shown on the Standard Detail Drawings and set to provide a minimum of a 6 inch tread. All steps shall be galvanized wrought steel 3/4" diameter, with hooked ends, and as shown in Standard Details. All frames and covers shall be of the sizes and types as shown on the Standard Detail Drawings. Material for frames and covers shall be in accordance with the Standard Specifications for Gray Iron Castings ASTM Designation A 48-56 for Class No. 30.

6. Inlets of the various types shall be constructed complete in the locations and at the elevations shown on the plans or as directed by the Engineer.

Brick masonry shall be as previously specified. All concrete for inlets shall be Class "A". Top slabs for Type A, B and D type inlets may be pre-cast. The masonry inverts of inlets shall be brick lined and shall slope smoothly toward the outlet pipe, except that where the

arrangement of inlets is such that a pipe is led from one inlet through another, then a channel shall be constructed of brick in the bottom of the inlet similar to those used for manholes. No extra payment will be made for such channels.

The Contractor will be permitted to construct inlets of monolithic reinforced concrete Class "A" with brick courses to permit raising or lowering the top slab, in lieu of brick masonry as specified under sub-paragraph (b). Reinforced concrete inlets shall be as shown on Standard Details.

Transition sections of curb and gutter shall be constructed as shown on plans and to meet and conform with any existing curb and gutter. Where it is ordered to remove and replace existing curb and gutter beyond the limits of the transition sections shown on the standard inlet details, or where additional curb and gutter is required to be constructed such work shall be paid for separately as Class "A" concrete.

IN NEW SUB-DIVISIONS where no curb and gutter had been constructed and will be built later by others, the Contractor will not be required to build inlet transition sections of curb and gutter; however, he will be required to leave the top brick course unmortared on Types A, B, D, E, and S Combination inlets so as to permit future adjustment of the top slabs.

Inlet frames, gratings and covers furnished by the Contractor shall be as detailed on the drawings and shall be made of cast iron in accordance with Standard Specifications for Gray Iron Castings ASTM Designation A 48-56 for Class No. 30. The Gratings and frames shall be machined or ground so that the grating has a uniform bearing when set into the frames and is flush with the rim of the frame.

Steps for inlets shall be spaced vertically and staggered as shown or directed. Material, size and type shall be identical as those specified for manholes.

7. Concrete cut-off walls shall be constructed of Class "A" concrete at the discharge ends of all storm drains as shown on the plans.

ARTICLE C-43 CONCRETE STRUCTURES

Section C-43.41 Description.

In these specifications, Concrete Structures shall embrace all construction composed of Portland Cement concrete, either plain or reinforced, except roadway and sidewalk pavement, curbs and gutters.

Section C-43.42 Materials.

1. Materials - Materials included in concrete structures shall be called for on the plans and standards and shall conform to the requirements of Article C-33 of these Specifications.

2. Storage of Materials - Materials shall be stored as specified in Section C-33.34 of these specifications.

3. Transit-Mixed Concrete - Transit-Mixed Concrete shall conform to all the requirements specified in Section C-33.34 of these specifications.

4. Proportions of Concrete - Unless otherwise specified on the plans or working drawing the concrete shall be proportioned as specified in Section C-33.33 of these specifications.

5. Classes of Concrete - All concrete shall be Class A and used in such portions of the structure as shown on the plans and Standards or as directed by the Engineer.

6. Measuring of Materials - Measuring of materials shall be done in accordance with the requirements set forth in Article C-33 of these specifications.

7. Materials for Forms and Falsework - The lumber to be used in the construction of the forms for concrete structures shall, for exposed surfaces, be dressed, matched, tongue-and-groove material. It shall be free from bulge or warp; of uniform thickness, and shall be sound and free from loose knots. Undressed lumber, not more than 8 inches in width, square edge and sound, may be used for backing or other surfaces left unexposed in the finished work. No lumber shall be used of less than 1 inch nominal thickness except as lining for forms.

Metal forms presenting a smooth surface of the desired contour, sufficiently thick and braced to withstand the weight of the concrete without bulging or becoming displaced, may be used.

Form material, if used a second time, shall be free from bulge or warp, and shall have been thoroughly cleaned.

Section C-43.43 Construction methods.

1. Design of Forms and Falsework - All forms and falsework shall be designed to retain and support safely a fluid weighing 140 pounds per cubic foot and in addition to a live load of 50 pounds per square foot of horizontal area of concrete surface inside the forms. Studs or joists shall be of lumber not less than 2 x 4 inch commercial size. Whaling shall be of lumber not less than 4 by 4 inch or 3 by 6 inch commercial size.

Falsework used to support the forms shall be supported on sills resting on rigid foundations or in piles driven until the bearing power of each pile is sufficient to support the load that will be imposed on it. Falsework shall be constructed so that there will be no appreciable settlement or distortion of the forms when the concrete is placed in them.

2. Construction of forms - Forms shall conform to the shape, lines and dimensions of the concrete as indicated on the drawings, and shall be held in place by means of studs or joists, whaling, and sufficient and substantial bracing. Forms shall be constructed substantially and shall be unyielding. All joints between form boards or panels for exposed surfaces of concrete shall be truly horizontal or vertical. Studs and joists shall be fastened to the form on the 2-inch face, and shall be spaced not more than 12 inches center to center per inch nominal thickness of form lumber. Spliced studding shall be securely fastened and shall lap not less than 3 feet. Whaling shall be placed horizontally along the back of and securely fastened to the studding, and spaced not more than 3 feet center to center. Rods shall be carried through the form and whaling; wiring shall be carried through the form and around the whaling. All parts of the forms shall be tight enough to prevent the leakage of mortar. Where wall or column forms bear on the surface of concrete previously poured, the joint so formed shall be caulked with suitable material to prevent the leakage of mortar.

Wood devices used to separate forms shall be removed before placing concrete within 4 inches of the same. Wood devices shall not be used to separate or space reinforcing steel.

Unless otherwise indicated on the drawings or specified, all exposed edges shall be chamfered with 3/4 inch material. All chamfer strips shall be straight, of uniform width and dressed.

The inside of forms shall be coated with non-staining mineral oil, or other approved material, before concrete is placed in forms; when oil is used, it shall be applied before reinforcing steel is placed.

Temporary clean-out openings shall be provided only where approved by the Engineer. All joints of clean-out openings shall be as specified above for other parts of forms.

The forms shall be inspected and dimensions carefully checked after the forms are erected and immediately preceding the placing of the concrete. Any bulging or warping, irregular or wavy lines shall be remedied, and all dirt, sawdust, shavings or other debris within the forms or any part thereof shall be removed.

3. Removal of Forms - The time of removal of forms shall be subject to the approval of the Engineer, but the following table may be used as a guide for the minimum time required before the removal of forms, but counting the days on which the average temperature is below 40° F:

Centering under beams and girders.....	28 days
Floor slabs and box culverts.....	10 to 14 days

Forms for ornamental work, railings, parapets, columns and walls may be removed in from 24 to 48 hours, unless otherwise directed. In cold, damp or freezing weather all vertical forms shall remain in place until the concrete has thoroughly set.

4. Placing of Concrete - Placing of concrete in any portion of the work shall not be started unless it can be entirely completed in daylight. No concrete shall be placed until the depth and character of the foundation, the dimensions of the forms, and the placing of the reinforcing steel have been approved by the Engineer.

Concrete shall be handled from the mixer to the place of final deposit as rapidly as practicable by methods which will prevent the separation or loss of the ingredients. It shall be deposited as nearly as practicable in its final position to avoid rehandling or flowing. All concrete shall be deposited in continuous horizontal layers not to exceed 12 inches in thickness. Dropping the concrete more than 4 feet without the use of an enclosed articulated chute (elephant trunk) or other approved means, depositing large quantities at any point, running or working it along the forms, or any other practice tending to cause separation or segregation of the ingredients will not be permitted.

Chutes or troughs shall not be used for conveying concrete. Chutes or troughs not to exceed 10 feet in length may be used for directing concrete.

All foundation excavations shall be pumped dry and concrete for footing courses shall be deposited in the dry. If it is necessary to maintain pumping during the placing of concrete to avoid placing concrete in water, the sump for the pump intake shall be located outside the forms and the pumping operations shall be conducted so as not to produce currents. In such cases, baffleboards shall be created, if necessary, to minimize currents.

Each section of structure between construction joints shall be poured monolithically and continuously without allowing time for initial set to take place in any part of the member before the concrete adjoining it has been placed.

Immediately after concrete has been deposited in the forms it shall be compacted by means of approved mechanical vibrators, applied directly to the concrete or to the forms. Rodding and spading shall be used, in addition, to compact the concrete adjacent to the forms and around reinforcing steel or embedded objects and into the corners of the forms.

The vibration shall be of sufficient intensity, frequency and duration to cause flow or settlement of the concrete and complete compaction. Over-vibration of the concrete, such as to cause segregation of the aggregates shall be avoided. A sufficient number of vibrators shall be provided to permit compaction of each batch or layer

before the next is placed without interruption or delays in the depositing.

Vibration shall be applied at the point of deposit and in the area of freshly deposited concrete and shall not be used to cause concrete to flow over long distance in the forms. The concrete shall be placed at close intervals to prevent excessive flowing. Care shall be taken to prevent the vibrator from penetrating partially hardened concrete in layers below and forming pockets.

If the forms show bulging or settlement while concrete is being placed, the placing shall be stopped until correction has been made.

5. Construction Joints - Construction joints shall be used only where shown on drawings or approved by the Engineer. Suitable keyways shall be provided at all construction joints as shown on drawings or directed by the Engineer.

Edges of construction joints shall be sharply defined straight lines accurately conforming to the position and alignment indicated on the drawings. In the case of horizontal joints, such sharp edges shall be formed by temporary square-edge strips secured to the inside surface of the forms.

Before fresh concrete is deposited on or against concrete which has set, forms shall be retightened and the surface of the set concrete shall be roughened and thoroughly cleaned of foreign matter and laitance and saturated with water. A layer of mortar 1 inch thick shall be placed on the cleaned surface of the hardened concrete just before fresh concrete is placed and the fresh concrete shall be placed before the mortar has had time to take its initial set. The mortar shall be composed of cement, water and fine aggregate in the same proportions as used in the concrete.

6. Protection and Curing - Concrete, when deposited, shall have a temperature of not less than 50 degrees Fahrenheit nor more than 120 degrees Fahrenheit. Heating the materials to obtain the required temperature shall be done by an approved method. No salt, chemicals or other foreign materials shall be mixed with the concrete for the purpose of preventing freezing.

Whenever the air temperature will probably fall below 35 degrees Fahrenheit, sufficient canvas and framework, or other types of housing, and heating equipment shall be provided to enclose and protect the structure in such a way that the air surrounding the fresh concrete shall be kept at a temperature of not less than 45 degrees Fahrenheit for a period of 7 days after the concrete is placed.

All concrete surfaces shall be kept continuously wet for a period of at least 7 days after the concrete has been placed. Immediately after the final finishing of any concrete which is to form a wearing sur-

face it shall be covered with heavy burlap. Such burlap shall be left in place and kept continuously wet for at least 7 days.

7. Surface Finish

(a) General - Extreme care shall be exercised in building the forms, spading and tamping the concrete, and in removing the forms so that all surfaces shall be well filled, straight, smooth and free of honeycomb. The structure, when completed, shall be clean and shall present a neat and uniform appearance.

The line and grade of the top at all horizontal surfaces of concrete shall be checked immediately after the placing of the concrete has been completed and any irregularities shall be adjusted at once. Before the concrete has received its initial set the top of horizontal finished surfaces shall be struck to a true surface and all excess material removed. Except as otherwise specified, such surfaces shall be carefully floated to a true, smooth surface.

Promptly after the removal of forms, projecting wire or other metal devices used for holding forms in place, and which pass through the body of the concrete, shall be cut at least 1/4 inch beneath the surface of the concrete and the holes or depressions thus made, and all other holes, depressions and small voids which show upon the removal of the forms, shall be filled with cement mortar mixed in the same proportions as that which was used in the concrete which is being repaired.

(b) Rubbed Finish - All surfaces exposed to general view shall be given a "rubbed" finish, unless indicated otherwise on the drawings. Such surfaces will usually include all parapets, curbs, wheel guards, coping, railings, columns, the outside and bottom of the exterior girders, the ends of arch rings, outer surfaces of spandrel walls, the exposed surfaces of wing walls, and the faces of abutments and piers.

All surfaces adjacent to earth shall be given a "rubbed" finish to a line at least 12 inches below the finished earth surface. Other surfaces shall be allowed to remain without special surface treatment except as hereinafter specified.

Where new concrete is added to the concrete in an existing structure, the existing concrete surfaces exposed to general view and adjacent to new concrete shall be cleaned and re-rubbed until the color produced blends with the new concrete.

"Rubbed" finish shall be produced as follows: Upon removal of the forms, defects shall be immediately repaired and the form marks removed by rubbing with a wetted wooden block. The concrete shall then be allowed to stand until it hardens to a state where the sand will not ravel or roll but will grind when rubbed with a carborundum brick. The surface shall then be

thoroughly rubbed with a carborundum brick, using plenty of water. After the surface has been brought to a true, even, uniform condition it shall be allowed to dry out, after which the cement dust shall be thoroughly cleaned therefrom with a piece of burlap or cement bag or other satisfactory material. Brush finish or pointing with grout shall not be done.

(c) Roadway Wearing Surfaces - When the top of the slab or a structure is to be used as a section of pavement or the base for a pavement, it shall always be struck off with a screed which is held parallel to the center line of the roadway and which rests on templates whose upper edges conform to the required cross section of the roadway. This screed shall be constructed so as to have sufficient strength to retain its shape and so that the cutting edge may be adjusted to conform to the profile of the roadway.

The screed shall be worked back and forth over the surface until the proper profile and cross section is obtained. The maximum spacing of templates shall be 15 feet. The length of the screed shall be at least 2 feet greater than the distance between adjacent templates. Templates shall preferably be constructed of steel bars supported from the forms or from the steel beams by adjustable steel supports.

After screeding, the surface of the slab shall be immediately floated with a wooden hand float to a true and even surface. The finished surface shall show no deviation in excess of 1/8 inch from a 10-foot templet placed parallel to the center line in any position. Deviations in excess of this requirement shall be connected before the concrete sets.

As soon as the surface has set sufficiently to permit walking on it, and no later than 10 o'clock of the morning following the placing of the concrete, it will be thoroughly checked by templet and all variations exceeding 1/8 of an inch in 10 feet will be plainly marked. Such variations shall be eliminated at once, if the same are high spots, by the use of carborundum bricks and water. The rubbing shall not be continued after contact with the coarse aggregate is made, and in no case shall it be done in such manner or carried to such extremes that the bond of the concrete will be broken.

8. Dampproofing and Waterproofing - All surfaces which will be adjacent to the earth shall be cleaned of all loose and foreign material and dirt, shall be scrubbed, after which the surface shall be allowed to dry and a dampproofing asphalt or tar applied. The method of application and materials required shall conform to the requirements of the A.A.S.H.O. Standard Specifications for Highway Bridges, Section 18 - Dampproofing.

9. Expansion Joints - Expansion joints shall

be constructed between adjacent sections of concrete where and as indicated on the drawings. Where premolded expansion joint filler and/or metal flashing is called for it shall be set and held accurately in position. Care shall be taken to prevent mortar or grout from entering the space provided for expansion.

10. Weep Holes, Drains, Anchor Bolts, Bearing Plates, etc. - All weep hole pipe, anchors, bolts, plates, castings, grillages, railings, etc., which are called for or indicated on the drawings to be embedded in the concrete shall be set accurately in the locations called for on the drawings and secured in such a manner as to prevent their displacement during the operations of placing concrete.

Care shall be taken to prevent concrete or grout from entering spaces which are indicated to be left open. Any concrete which enters such spaces shall be removed.

Bearing plates for supporting structural steel work shall be set accurately to line and grade and shall be grouted and placed as indicated on the drawings. Grout shall be mixed in the proportion of 1 part of cement to 2 parts of fine aggregate with the addition of the minimum amount of water required for plasticity.

11. French Drains - French drains shall be constructed of the materials and dimensions and in the locations indicated on the drawings as appurtenant to culverts, abutments, retaining walls, and other concrete structures.

LIBER 2 PAGE 129

DIVISION C
PART V
MISCELLANEOUS AND INCIDENTAL CONSTRUCTION

II - 98

LIBER 2 PAGE 130

ARTICLE C-51 PORTLAND CEMENT CONCRETE CURBS, GUTTERS
AND COMBINATION CURB AND GUTTER

Section C-51.51 Description.

This construction shall consist of Portland cement curb, gutter, or combination curb and gutter constructed in accordance with the requirements of these specifications, and in conformity with the lines, grades, dimensions and cross-sections shown in the standards.

This specification applies only to construction that is not integral with a base or pavement. When curbs or headers are to be constructed integrally with concrete base or pavement, the specifications for the base or pavement will apply, except as may be otherwise indicated on the plans.

Section C-51.52 Materials.

1. Materials - The materials used shall meet the requirements set forth in Article C-33 of these specifications.

2. Proportioning, Mixing and Testing - The measurement of materials and the proportioning, mixing and testing of the concrete shall be done in accordance with the methods specified in Article C-33 of these specifications.

Class A concrete shall be used.

The concrete shall be of appropriate consistency, and shall have a slump of not less than 2 or more than 3 inches, unless methods of vibration are employed which require a smaller slump.

3. Sub-grade - The sub-grade shall be thoroughly compacted and shall meet the requirements set forth in Article C-21 of these specifications.

4. Drainage Openings - Drainage openings shall be made through curbs or gutters as indicated or directed, and all castings, pipe or other fittings shall be set accurately as indicated on the plans. Where weep holes are installed, the Engineer may require that an appropriate quantity of coarse aggregate be placed behind the opening.

5. Forms - The forms shall be of metal or wood, straight and free from warp, and of sufficient strength, when staked, to hold the concrete true to line and grade without springing or distorting. Wood forms shall be of selected and dressed material at least two (2) inches thick, except that on curves or short radii the requirements for two inch (2) thickness may be waived to permit flexible material. Form boards for exposed curb surfaces shall be at least as wide as the exposed surface. The facing board used for the front face of the curb in combined curb and gutter construction shall be so constructed and shaped that its lower edge conforms to the radius specified on the standards. Metal

forms shall be of approved sections, and shall have a flat top surface. The depth of the forms shall be equal to the depth of the curbing. Adequate means shall be provided for securely fastening forms together at the tops. Forms shall be securely staked, braced and held together to exact lines and grades and shall be sufficiently tight to prevent the leakage of mortar.

Metal divider plates or templates shall be not less than 1/8" thick and of such design as to remain securely in place and produce a straight, smooth joint after they are removed. They shall be of the full dimensions of the curb or gutter cross-section.

All forms shall be thoroughly cleaned and oiled immediately prior to each use.

6. Reinforcement - If the use of reinforcing steel is required by the drawings, the steel shall conform to the requirements as to design and spacing indicated thereon. Approved methods of support and placement which will insure maintaining the steel in correct position shall be employed.

7. Joints - All curbs, gutters, or combination curb and gutter shall be constructed with 3/4 inch expansion joints at intervals of 40 feet except when other spacing or thickness of joints is indicated on the drawings. The expansion joints shall be formed with premolded joint filler of the thickness of the joint. The filler shall be cut to the full depth, length, width and cross-section of the joint, and any portion that protrudes from the finished concrete shall be trimmed as directed.

Unless the curbs, gutters or combination curb and gutter are reinforced, they shall further be divided into sections not more than 20 feet in length or as otherwise indicated on the plans. The length of the sections may be reduced to not less than 6 feet when necessary for closures. This division shall be made by means of metal templates or divider plates of the type hereinbefore described, which shall extend across the full width of the curb, gutter or combination curb and gutter, and at least 1 inch below its bottom surface.

Either an expansion joint or metal template joint shall be formed at all intersections at the point where the straight and curved sections meet.

All joints shall be constructed truly perpendicular to the face and top of the curb or gutter and all templates shall be held securely and rigidly in place. All joints other than expansion joints shall be sealed with a joint seal meeting the requirements of Section C-33.32 of these specifications.

Section C-51.53 Construction Methods.

1. Placing Concrete - Concrete shall not be placed when the air temperature in the shade is below 40 degrees Fahrenheit and falling or until it is at or above 35 degrees Fahrenheit when rising.

The sub-grade shall be clean, smooth, firm and moist, but not wet or muddy, when the concrete is placed.

The concrete shall be deposited in layers thin enough to permit thorough spading and consolidating. It shall be spaded and tamped or vibrated sufficiently to produce a dense, homogenous mass and to bring the mortar to the surface. Particular attention shall be given to spading along the surface of the forms to eliminate voids. When the forms are filled, the surface shall be struck off and then finished smooth and even with a wooden float. In striking off gutter surfaces, a template of the form and shape of the gutter shall be used. Before the concrete is given the final finishing, the surface of the gutter and the top and face of the curb shall be checked with a 10-foot straightedge and all irregularities of 1/4 inch or more shall be eliminated.

While the concrete is still soft, the exposed edges of all curbs and gutters shall be rounded with appropriate edging tools to the radii shown on the standards. The back edge of curbs and the front edge of gutters shall be rounded to a radius of 1/4 inch. The metal templates for the joints shall be removed as soon as the concrete has set sufficiently to hold its shape, and the edges of these joints and of the expansion joint shall be required to a radius of 1/4 inch.

2. Finishing - The forms shall be removed as soon as the concrete has set sufficiently to avoid being injured and within 24 hours, unless otherwise directed by the Engineer. All minor defects shall be eliminated by filling with a mortar composed of one part Portland cement to two parts fine aggregate. Plastering shall not be done and all sections of unsatisfactory construction shall be removed and replaced with properly constructed sections. As soon as the defects are corrected, and while the concrete is still green, all exposed surfaces of the curbs and gutters shall be finished smooth and even and all tool marks shall be removed by means of a wooden float which shall be kept moist by wetting.

Any exposed surfaces against which some rigid type of construction is to be met shall be left smooth and uniform so as to permit free movement of the curb, gutter or combination curb and gutter.

3. Protection and Curing - Protection and curing shall be done in accordance with the requirements set forth in Article C-33 of these specifications.

4. Backfilling and Cleaning Up - After the concrete has set sufficiently, the spaces along the front and back of the curb or gutter shall be backfilled to the required elevation with suitable material which shall be thoroughly consolidated in four (4) inch layers by appropriate hand or mechanical tampers.

All waste or foreign materials shall be disposed of as directed and the entire work left in a neat and presentable condition.

ARTICLE C-52 CONCRETE SIDEWALKS - ONE COURSE

Section C-52.51 Description.

This item shall consist of constructing plain Portland cement concrete sidewalks in conformity with the lines, grades, thickness and typical cross sections shown on the Standards, and in accordance with these specifications.

Section C-52.52 Materials.

1. Materials for concrete sidewalks shall conform to the requirements set forth in Article C-33 of these specifications.

2. Subgrade - The subgrade shall be prepared to a firm, smooth surface true to the lines, grades, and typical cross sections shown on the Standards and shall meet the requirements set forth in Article C-2 of these specifications.

3. Forms - Side forms shall be of lumber 2 inches thick or of steel of equal strength. Flexible strips may be used on curves. The forms shall be rigidly held to line and grade and shall at no time deviate more than $\frac{1}{4}$ inch from an accurate template 10 feet in length. They shall be cleaned and oiled after each time they are used.

4. Expansion Joints - Transverse expansion joints $1\frac{1}{2}$ inch thick shall be placed at intervals of 40 feet. They shall be placed at grooved division lines. Premolded expansion joint material of thickness equal to that of the joint and of width equal to $1\frac{1}{2}$ inch less than the thickness of the walk shall be placed across the walk at each expansion joint. All concrete shall be cleaned from the top of premolded joint material.

5. Preparation of Concrete - Class A concrete shall be used. The proportions, methods of measuring materials and mixing shall be as specified in Article C-33 of these specifications. The slump shall not exceed 3 inches nor shall it be less than $1\frac{1}{2}$ inches, and should approximate 2 inches.

Section C-52.53 Construction Methods.

1. Placing and Finishing - The sub-grade shall be checked for conformity to the designated grade and cross section and shall be moistened before concrete is placed thereon. Concrete shall not be placed on a muddy or frozen sub-grade.

The slab shall be divided at 4 foot intervals by using metal division plates. The division plates shall have a thickness of 1/8 to 3/16 inch and shall be cut to the cross section of the slab, and shall be rigidly held in a plane perpendicular to the forms and to the surface of the slab while concrete is being placed.

The concrete shall be deposited upon the sub-grade in such manner as to reduce to a minimum the necessary rehandling, and shall then be shoveled and spaded to the required depth. It shall be thoroughly spaded along the forms and struck off with a rigid template, or other suitable means, at such elevation that when floated it will conform to the grade and cross section indicated.

As soon as it is properly struck off, the concrete shall be floated to a smooth, uniform surface. A wooden float not less than 24 inches by 3 inches by 1 inch in size shall first be used to produce an even surface free from bumps or depressions. A smaller float may then be used to remove marks and minor irregularities.

The division plates shall be removed after the concrete has hardened sufficiently to avoid breaking the edges or corners of the slab.

All edges along the joints and sides of the slab shall be neatly rounded to a 1/4 inch radius with an edging tool.

After the joints and edges have been rounded and before the concrete attains its final set, the surface shall be broomed so as to produce a non-skid finish. The broom shall be of such design and so manipulated as to produce a finish of uniform granular texture. The fibers shall not be allowed to penetrate to a depth of more than 1/16 inch beneath the surface. The broom shall be moved across the slab at right angles to the edges. The strokes shall be matched so as to cover the entire surface without marring its texture or disfiguring the joints and edges.

2. Curing - Curing shall be done in accordance with the requirements set forth in Article C-33 of these specifications.

3. Removal of Forms - When the concrete has hardened sufficiently and in not less than 24 hours nor more than 36 hours, the forms shall be removed. If honeycomb exists on the sides of the walk it shall be satisfactorily repaired immediately following removal of the forms. Shoulder material shall be placed against

the slab to the elevation and width indicated on the Standards.

4. Protection - Concrete shall be protected from traffic by means of suitable barricades until it has attained sufficient strength to prevent its being injured.

ARTICLE C-53 RIPRAP

Section C-53.51 Description.

This specification covers the furnishing and placing of a riprap stone for use as a protection to embankment slopes, foundations, toe walls, etc., at locations indicated on the plans and in conformance with the Standards and specifications.

Section C-53.52 Materials.

1. The stone for riprap shall consist of field stone or rough unhewn quarry stone as nearly rectangular in section as is practicable. The stone shall be dense, resistant to the action of air and water, and suitable in all other respects for the purpose intended.

The stones shall, in general, be of the wide flat type with their larger faces roughly rectangular and parallel. The minimum thickness of stone shall be 9" (measured perpendicular to face of riprap). No face dimension shall be less than the thickness of the stone. Unless otherwise specified, the stone shall weigh not less than 100 lbs. each and at least 60% of them shall weigh more than 150 lbs. each.

2. The mortar used for this work shall meet the requirements set forth in the A.A.S.H.O. Standard Specification Designation M-45 for sand and Designation M-85 Type 1 for cement.

Section C-53.53 Construction Methods.

1. The stone for this purpose shall, as far as practicable, be selected as to size and shape in order to secure fairly large, flat-surfaced stones which will lay up with a true and even surface and a minimum of voids. The stone shall be placed upon a slope conforming with the requirements of the plans and in the event no slope is indicated for the work proposed, it shall not be steeper than the angle of repose of the slope material. The stone shall be so laid that the weight of the larger stones is carried by the soil and not by the adjacent stones. Fifty percent of the mass shall be broad flat stones, two (2) cubic feet or more in volume, laid with the flat surface uppermost and parallel to the slope. These stones shall be placed near the base of the slope.

The spaces between the larger stones shall be filled with stones of suitable size, leaving the surface smooth, reasonably tight and conforming to the contour required. In general, the stone shall be laid with a degree of care that will insure for plane surfaces a maximum variation from a true plane of not more than one and one-half (1½) inches in four feet. Warped and curved surfaces shall have the same general degree of accuracy as specified above for plane surfaces.

2. As each of the larger stones is placed it shall be surrounded by fresh mortar and adjacent stones shall be shoved into contact. After the larger stones are in place, all of the spaces or openings between the stones shall be filled with mortar and the smaller stones then placed by shoving them into position, forcing excess mortar to the surface and insuring that each stone is carefully and firmly bedded laterally.

3. After the work has been completed as above described, all excess mortar forced up shall be spread uniformly to completely fill all surface voids. All surface joints shall then be roughly pointed up either with flush joints or with shallow, smooth raked joints.

4. Cold weather protection and curing - The methods specified in Article C-33 of these specifications shall apply in all respects.

ARTICLE C-54 SODDING AND SEEDING

Section C-54.51 Description.

This item shall consist of removing or lifting, furnishing and placing approved sod, and operations incidental to proper seeding, of areas shown on the plans.

Section C-54.52 Materials.

1. Grass Sod - Grass sod shall be of a quality approved by the Engineer containing not less than 50% Kentucky bluegrass, free from weeds and shall when placed be live growing grass not less than three years old. The section of sod shall have not less than one and one-half inches of soil adhering firmly to the roots and shall be cut in widths not less than twelve inches and not more than eighteen inches.

2. Seed - All seed used shall be a recognized brand of a type approved by the Engineer, capable of producing grass native to the area being treated.

3. Lime - All lime used shall be a commercial brand commonly used for seeding purposes.

4. Fertilizer - All fertilizer used shall be a commercial brand commonly used for seeding purposes.

Section C-54.53 Construction Methods.

1. Sodding

(a) Sod sections or strips shall be of such length as to be lifted without breaking, tearing, and to prevent the loss of soil. Where strips are required, the sod must be rolled without damage with the grass folded inside.

(b) Sections or strips shall be cut away below the root line with an acceptable sod cutter and shall be hauled or carried to storage piles or to the point of installation without breaking, and set in final place as indicated on the plans. All sod shall be transplanted within 24 hours from the time it is harvested, unless they are stacked at their destination in a manner satisfactory to the Engineer. All sod in stacks shall be kept moist and protected from exposure to the air and sun and from freezing. Any sod permitted by the Contractor to dry out may be rejected whenever, in the judgment of the Engineer, its survival after placing shall have been rendered doubtful.

(c) In no event shall more than forty-eight (48) hours elapse between the cutting and planting of the sod.

(d) During wet weather the sod shall be allowed to dry sufficiently to prevent tearing during handling and placing, and during dry weather it shall be watered before lifting to insure its vitality and to prevent the dropping off of the soil in handling.

(e) Before placing or depositing sod upon any areas, all shaping and dressing of such areas shall have been completed. The completed area to be sodded shall present a smooth, uniform, well-tilled surface true to line and cross section, and any raking required to accomplish this will be done immediately prior to the placing of the sod.

(f) All areas to be sodded are to be fertilized at the rate of ten (10) pounds per one thousand (1,000) square feet. This fertilizer and surface will be dampened down immediately before applying sod.

(g) Sod shall be lifted from trucks or storage piles and placed by hand with close joints and no overlapping. All cracks between blocks of sod shall be closed with small pieces of sod. After laying, the sod shall be sprinkled thoroughly and then tamped. "Tamping" shall consist of firmly closing the seams between sods by use of a hand tamp, weighing about fifteen (15) pounds and having a flat surface of approximately one hundred (100) square inches. Any slipping of sod is to be corrected by the Contractor.

(h) Adequate water and watering equipment must be on hand before sodding begins, and sod will be kept moist until it has become established and its continued growth assured or until accepted.

(i) On slopes two to one (2:1) and steeper, sod shall be laid with the long edges parallel to the contour starting at the bottom of the slope. Successive strips shall be neatly matched and all joints staggered or broken. Where the sod may be displaced during sodding operation, the workmen when replacing it shall work from ladders or treaded planks to prevent further displacement.

(j) Sodding done on slopes two to one (2:1) and steeper, shall have tacked securely in each strip or section of sod at least two stakes not more than two (2) feet apart, with the flat side against the slope. Stakes may be wood wedges and shall be 1/2" x 1" x 12" to 1/2" x 1" x 15", driven flush with the top of the sod.

2. Seeding, Topsoil, and Mulching

(a) General - The Contractor shall furnish all labor, equipment and material to spread two inches of topsoil on all slopes and disturbed areas, prepare a seed bed and seed and mulch all such areas as directed during construction.

(b) Materials - Topsoil shall be obtained from stockpiles stripped during grading operations. In the event that these stockpiles are insufficient, the Contractor shall notify the Director.

Seed shall be procured from an approved source and shall consist of the following mix:

- 45% Kentucky 31 Fescue
- 20% Lespedeza
- 15% Red Top
- 20% Perennial Rye

Fertilizer shall be commercial grade having an analysis of 5-10-5. The mulch shall consist of thoroughly threshed wheat, rye, or oat straw.

(c) Construction Methods - Topsoil shall be placed on all slopes and disturbed areas to a minimum depth of two inches.

After spreading the topsoil all stuff clods, large lumps, large rocks, stumps and litter shall be raked up and removed by the Contractor.

Spreading shall be completed in such a manner that seeding can proceed without further preparation.

Fertilizer shall be applied at the rate of 15 pounds per 1000 square feet.

Application of fertilizer and seed may be either the dry or set method at the option of the Contractor, and shall comply with applicable portions of Section 36.04-3 of the State Roads Commission Specifications.

Mulch materials shall be furnished, hauled and evenly applied on the area designated by the Engineer. They shall be applied at an average rate of 115 pounds per 1000 square feet. Mulching shall conform to Section 36.05-3 of the SRC Specifications.

ARTICLE C-55 PLAIN AND PERFORATED PIPE UNDERDRAINS

Section C-55.51 Description.

This item shall consist of the installation of pipe underdrain of a kind and size designated on the plans, constructed in accordance with these specifications and conforming to the lines and grades given.

Section C-55.52 Materials.

1. Plain pipe for underdrains shall be concrete of the hub-and-spigot type meeting the A.A.S.H.O. Standard Specifications for concrete sewer pipe, Designation M-86.

2. Perforated Pipe for underdrains shall be either concrete or corrugated metal.

(a) Perforated Concrete Pipe shall meet the requirements as noted in paragraph 1 above and shall be constructed in three foot lengths. Perforations shall be made around one-half the circumference of the pipe and in accordance with the following table:

Diameter of Pipe	Number of Holes	Diameter of Holes	Longitudinal Spacing	Approximate Circumferential spacing
6"	24	1/4"	7"	2"
8"	32	5/16"	6"	2"
10"	40	5/16"	6"	2"
12"	48	5/16"	6"	2"

(b) Perforated Corrugated Metal Pipe shall meet the requirements of the A.A.S.H.O. Standard specifications for Corrugated Metal Culvert Pipe, Designation M-36.

(1) Perforated corrugated metal pipe 21" or smaller in size may be either riveted pipe or pipe having helical corrugations which are continuous from end to end of each length of pipe, with a continuous lock seam paralleling the corrugations, or a continuous welded longitudinal seam. The seam shall be so constructed as

not to affect the shape or nominal diameter of the pipe, nor shall it reduce the strength of the pipe.

(2) Corrugations - When helically corrugated pipe is supplied in diameters 10" and smaller, the corrugations shall have a pitch of not less than 1 3/8" nor more than 1 7/8" center to center, measured at right angles to the direction of the corrugations, and a depth of not less than 1/4". When helically corrugated pipe is supplied, in diameters larger than 10", the pitch of the corrugations shall be not less than 1 7/8" nor more than 2 1/4", center to center, and the depth shall be not less than 7/16". The helical angle shall be not less than 45 degrees.

(3) Perforations - This section applies to both helically corrugated and riveted pipe. Perforations shall be located in the inside crests of the corrugations and shall have a diameter of 5/16 inch, plus or minus 1/16 inch. Perforations shall be in longitudinal rows, spaced approximately on one inch centers and extending to within 4 inches of each end of each length of pipe. Perforations may be made after the pipe is galvanized, and the rows of perforations shall be in two groups with half the number of rows on either side of an unperforated segment. The minimum number of rows of perforations and the minimum width of the unperforated segment shall be as given in Table I. The top row of holes shall be not less than 22 1/2 degrees below the horizontal axis.

(4) Gage and Weight - The average weight per linear foot of finished helically corrugated pipe shall not underrun the computed weight as given in Table 1 by more than 5 per cent. The weight per foot for riveted pipe shall be in accordance with the latest editions of the A.A.S.H.O., Designation M-36.

TABLE I

Dimensions, Weight and Spacing Perforations

Nominal Internal Diameter (Inches)	Minimum No. of Rows of Perforations	Minimum Width of Unperforated Segment (Inches)	Gage	Helically Corrugated Pipe Weight per Lineal Foot of Pipe (Lbs)
6	4	4 1/2	18	4.0
8	4	7	18	5.2
10	4	9	18	6.4
12	6	9 1/2	16	10.1
15	6	13	16	12.6
18	6	16 1/2	16	15.0
21	6	20	16	17.4

(5) Coupling Bands - Unless otherwise specified, field joints shall be made with band couplers. The sheets shall be galvanized and of the same base metal as that in the pipe. Bands for helically corrugated pipe shall be of number 18 gage. Band couplers shall be at least 7 inches wide. Band couplers for helically corrugated pipe shall be at least 7 inches wide. Band couplers for helically corrugated pipe shall have corrugations that mesh with the corrugations of the pipe. If a 1-piece band coupler is supplied for helically corrugated pipe, it shall be fastened by two 3/8" diameter galvanized bolts; if a 2-piece coupler is supplied, it shall be fastened by four 3/8" diameter galvanized bolts. Other equally effective coupling bands may be provided if prior approval of the purchaser has been secured.

2. Aggregate for back-filling shall be sand meeting the requirements of A.A.S.H.O. Standard Specifications for Fine Aggregate for Portland Cement Concrete, Designation M-6, and No. 4 A.A.S.H.O., Designation Coarse Aggregate.

Section C-55.53 Construction Methods.

1. Plain Pipe Underdrain

(a) The trench to receive the underdrain shall be excavated to the width, line and grade given on the plan.

(b) The excavated trench shall be back-filled with No. 4 aggregate to a depth of two inches for four inch pipe, three inches for six inch pipe, and four inches for eight inch pipe. This bedding material shall be placed at least 25 feet ahead of the laying of the pipe.

(c) The pipe shall be laid with the hub and upgrade and the spigot end fully entered into the adjacent hub, after which the joints shall be covered with two thicknesses of asphalt paper. The strips of paper shall be not less than 6 inches in width and of sufficient length to permit the ends to be turned outward and laid flat on the bottom course of the bedding area, on either side of the pipe for a distance of three inches.

(d) After the pipe has been laid and inspected for line, grade and joints, the No. 4 aggregate shall be placed to a depth of 6 inches over the top of the pipe. From this point, the remainder of the trench shall be filled with sand. In placing the aggregate, care shall be exercised so that the paper covering over the joints is not displaced.

(e) Outlets shall be built of the same size and type of pipe used in the underdrain. The joints in the outlets shall be cemented with mortar and

the trench shall be back-filled with earth. No back-filling shall be done over cemented joints until a twelve hour period has elapsed.

2. Perforated Pipe Underdrain -

The method of construction for perforated pipes, underdrains shall be the same as for plain pipe underdrain except that where concrete pipe is used, the joints shall be carefully cemented with cement mortar and where corrugated pipe is used, the pipe shall be joined with metal bands of the same quality as the pipe.

ARTICLE C-56 Patching Rigid Type Pavement

Section C-56.51 Description

This item shall consist of the removal of broken, damaged or designated sections of rigid pavements and the replacement with new materials in accordance with these Specifications and the Standards.

Section C-56.52 Materials

All materials used in this item shall meet the requirements set forth in Article C-33 of these Specifications except that when specified by the Engineer High-Early Strength Cement shall be used in the concrete.

Section C-56.53 Construction Methods

1. Removal of Existing Pavement

(a) Except where otherwise indicated or directed by the Engineer the existing pavement shall be removed to the following uniform widths:
Transverse Patching - No less than ten (10') feet and leaving at least ten (10') feet of pavement remaining to the nearest joint.

Longitudinal Patching - Not less than ten (10') feet and leaving at least ten (10') feet of pavement remaining to the nearest joint.

(b) Extreme care shall be taken to leave the undisturbed portions of the existing pavement with neatly trimmed edges approximately vertical.

2. Preparation of Sub-Grade - The sub-grade shall be thoroughly compacted to meet the requirements set forth in Article C-4, C-21, and C-33 of these Specifications.

3. Replacement of Pavement - Concrete shall be placed in accordance with the methods outlined in Article C-33 to a depth of at least three and one-half inches (3 1/2") prior to the placement of steel reinforcement of the size and description specified in the Standards and shall be carefully worked with tampers, spades or other tools to completely fill all voids.

Following the placement of steel, the concrete shall be placed to the final minimum thickness of eight inches by carefully working the mixture into all voids and irregularities left in the trimming of the existing pavement. The patch shall then be struck off with a straightedge or screed to the surface of the adjacent concrete and then finished as specified for hand finishing in Article C-33 of these Specifications.

4. Curing and Cold Weather Concreting - Curing and cold weather concreting shall be done in accordance with the requirements set forth in Article C-33 of these Specifications.

ARTICLE C-57 PATCHING FLEXIBLE TYPE PAVEMENT

Section C-57.51 Description

This item shall consist of the removal of broken, damaged or designated sections of flexible pavements and the replacement with new materials in accordance with these Specifications and the Standards.

Section C-57.52 Materials

The materials used shall meet the requirements of Section C-25.33 and Article C-32 of these Specifications.

Section C-57.53 Construction Methods

1. The backfilling of any trenches shall be in accordance with Article C-4 and C-21 of these Specifications.

2. The surface course, base course and sub-base shall be removed for at least 18 inches outside the limits of the damaged area.

3. The thickness of pavement replaced shall be at least the thickness of the existing pavement, but in no case less than six inches. The surface course shall be 2 inches of Type A asphaltic concrete surface course meeting the requirements of Article C-32 of these Specifications. The base course shall be Type A asphaltic concrete base course meeting the requirements of Section C-25.33 of these Specifications and shall be used for the entire thickness of the patch except for the 2 inch surface course.

4. The methods of replacement shall be as specified in Articles C-25 and C-32 of these Specifications except that when the thickness of the base course exceeds four inches, the base course shall be laid in two or more equal courses.

ARTICLE C-58 BITUMINOUS CONCRETE CURB

Section C-58.51 Description

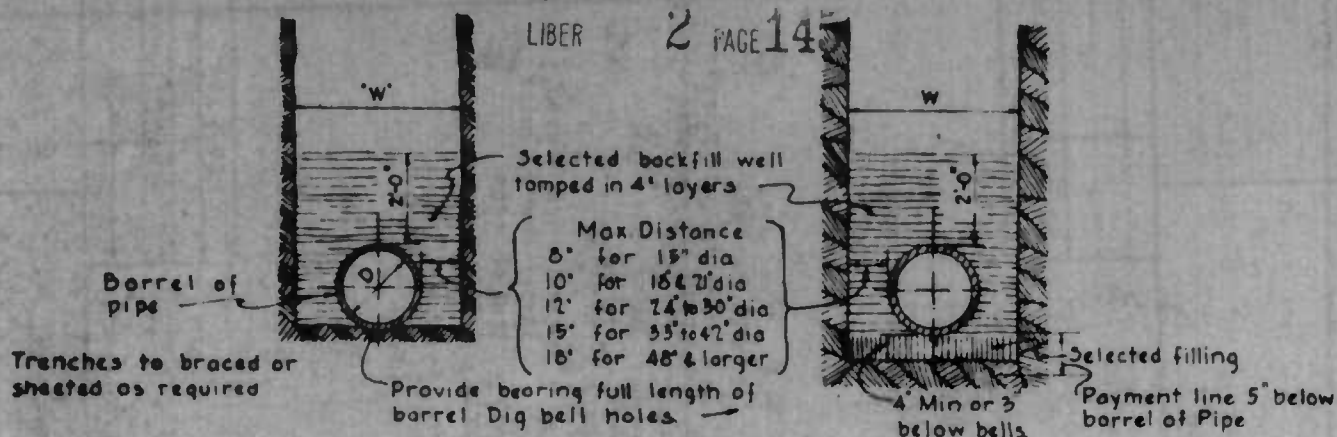
This item shall consist of bituminous concrete curb placed upon a prepared base and constructed to the lines, grades and dimensions shown on the Plans or Standards.

Section C-58.52 Materials

The material used in this construction shall conform to the requirements for Bituminous Concrete Curb, PF-1 as specified in Article C-32 of these specifications.

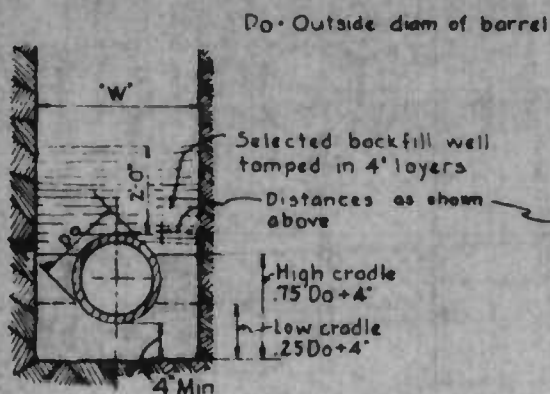
Section 58.53 Construction Methods

1. Excavation - All necessary excavation shall be completed and the subgrade or base properly shaped and adequately compacted at the required elevation.
2. Tack Coat - If the bituminous concrete curb is to be placed upon an existing base course or pavement the Engineer may direct the use of a tack coat.
3. Curbing Machine - A curbing machine with an approved mold form shall be used in the construction of bituminous concrete curb. In inaccessible areas where the use of a curbing machine is impractical, the Engineer will permit the placing and compacting of curbing by acceptable hand methods.
4. Placing Curb - Pegs and strings or chalk lines shall be used over the existing or prepared base to insure proper alignment and elevation for the curbing to be placed. During the machine placing operations where it is evident that compaction is inadequate, the mix shall be adjusted, the machine loaded with additional weight, or other measures taken to insure adequate compaction. The completed curbing shall have a smooth even texture without porous or honeycombed spots. Sections of curbing that the Engineer considers to be unsatisfactory, for any reason, shall be removed and replaced at the Contractor's expense.
5. Backfilling - After the curbing has been completed it shall be adequately protected from damage until the mixture has hardened sufficiently to permit backfilling where required. Any necessary backfill material shall be consolidated by tamping or rolling.



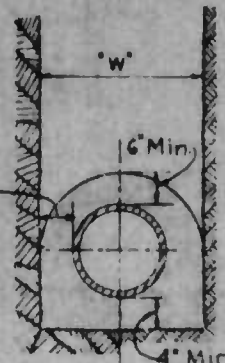
TRENCH IN EARTH

Nominal Pipe Diameter	Payment	
	Cu Ft Per Lin Ft	
	High Grade	Low Grade
15"	2.82	1.75
18"	4.12	2.35
21"	4.52	2.62
24"	5.95	3.34
27"	6.58	3.70
30"	7.42	4.18
36"	9.47	5.08
36"	10.53	5.65
42"	12.50	6.64
48"	16.23	8.49
54"	18.46	9.64
60"	20.80	10.95
66"	23.08	12.25



TRENCH IN ROCK

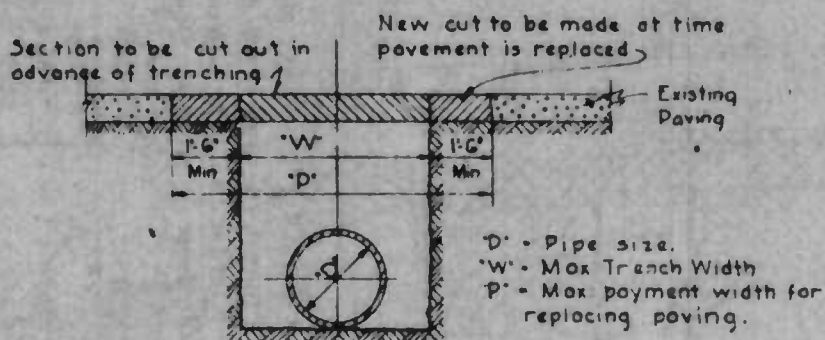
Nominal Pipe Diameter	Maximum Payment
	Cu Ft Per Lin Ft. Concrete Encasement
15"	420
18"	571
21"	635
24"	822
27"	894
30"	963
33"	1216
36"	1309
42"	1522
48"	1963
54"	2297
60"	2495
66"	2771



CONCRETE CRADLE

CONCRETE ENCASEMENT

Note Pour concrete against undisturbed earth Remove sheeting before pouring concrete or leave lower portion of sheeting in place



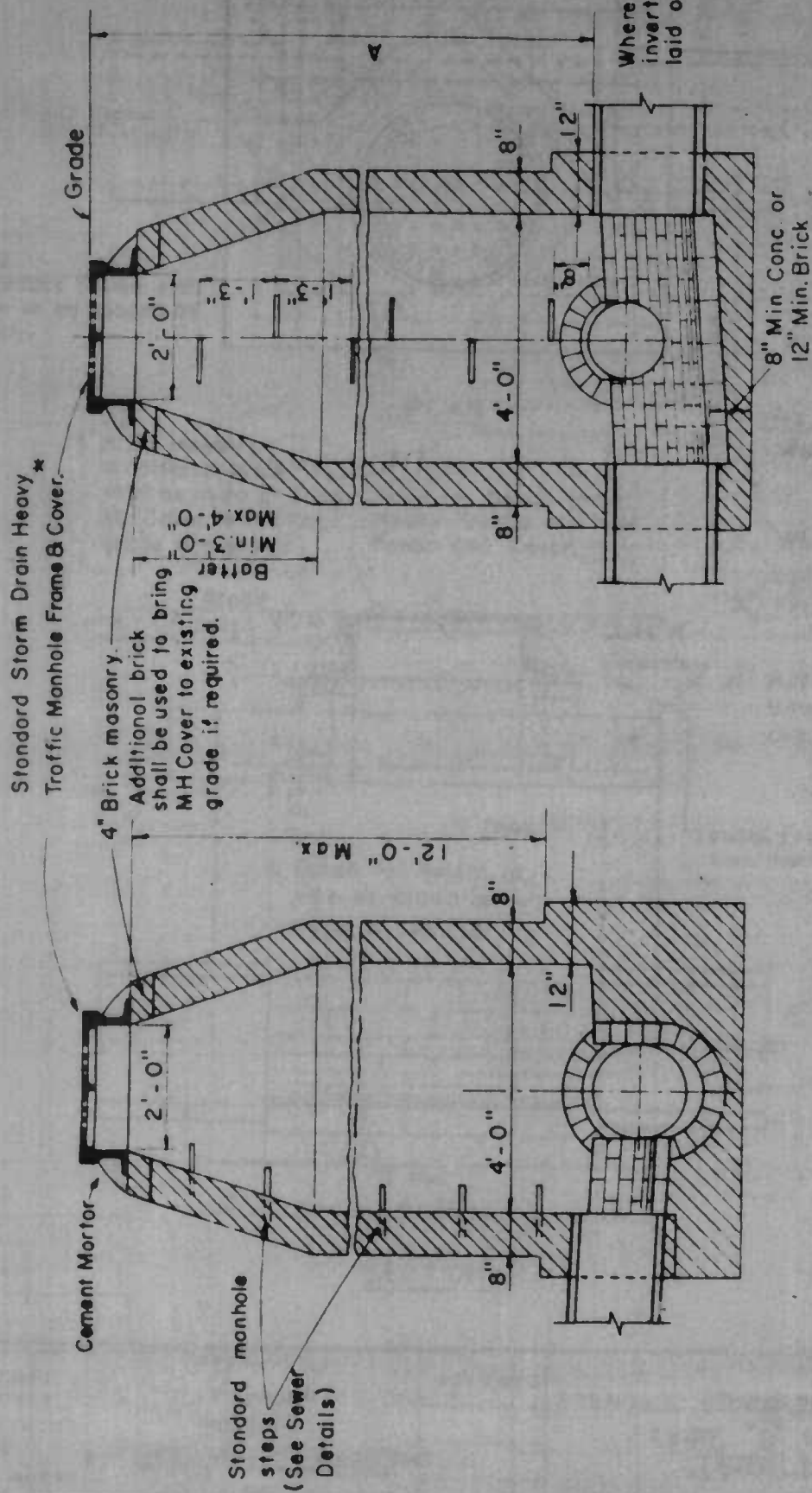
DETAILS OF CUTTING AND REPLACING PAVING

Other than State Roads

Nominal Pipe Diam	Payment	Widths
	Trenches	Paving
"D"	"W"	"P"
15"	2'-11"	5'-11"
18"	3'-7"	6'-7"
21"	3'-10"	6'-10"
24"	4'-6"	7'-6"
27"	4'-9"	7'-9"
30"	5'-1"	8'-1"
33"	5'-10"	8'-10"
36"	6'-2"	9'-2"
42"	6'-9"	9'-9"
48"	7'-10"	10'-10"
54"	8'-5"	11'-5"
60"	9'-0"	12'-0"
66"	9'-7"	12'-7"

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. J. Smyke</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS TRENCHES WIDTHS, CRADLES AND REPAVING	
	<i>Harold R. Hamilton</i> DIVISION OF ENGINEERING 1/1/66 DATE			

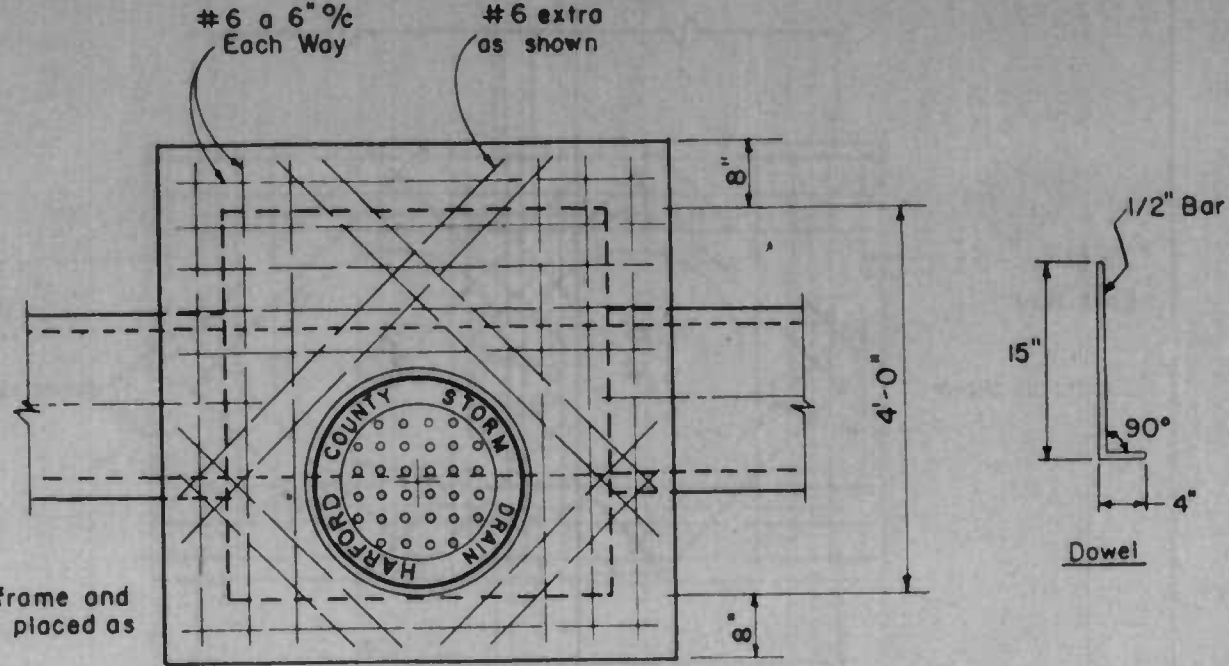


Notes

1. Manhole shall be brick or 3000 psi Concrete poured in place.
 2. Where A (cover) is less than 3'-6" use Type B Manhole (for pipes 36" & smaller)
 3. For pipe sizes 42" and larger use Type C Manhole.
- * Where directed, grating cover (similar to Dewey Bros. Inc. MH-RCR-60

REVISION	DATE	BY

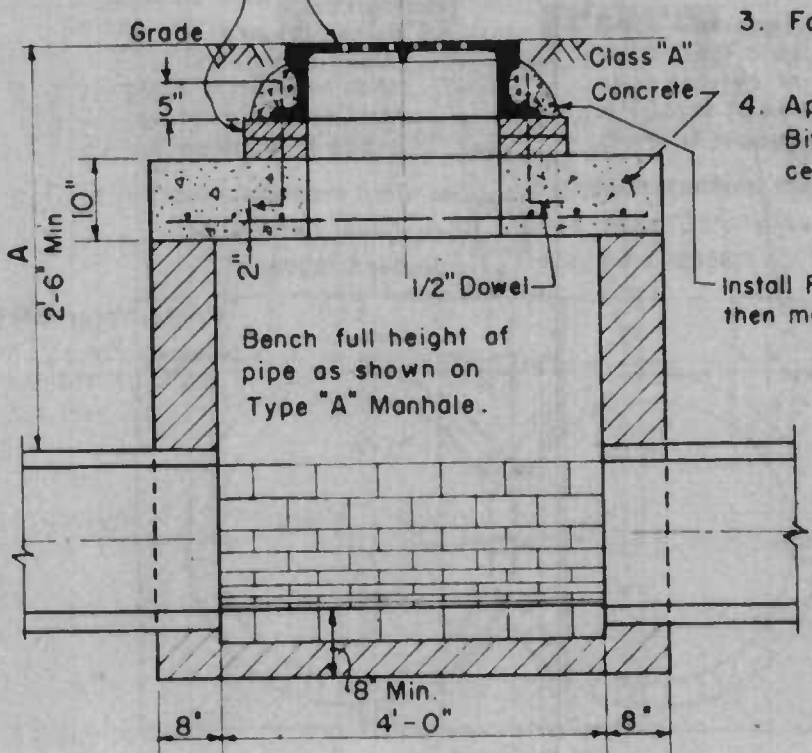
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED	REVIEWED	STANDARD STORM DRAINAGE DETAILS TYPE A-1 MANHOLE (FOR NORMAL DEPTHS)	D-2
	<i>Harold A. Hamilton</i> DIRECTOR DIVISION OF ENGINEERING DATE			



Note:
Manhole frame and cover to be placed as shown.

PLAN

4" Brick masonry. Additional brick shall be used to bring MH Cover to existing grade if required. Standard Storm Drain Heavy Traffic Manhole Frame and Cover.



Notes:

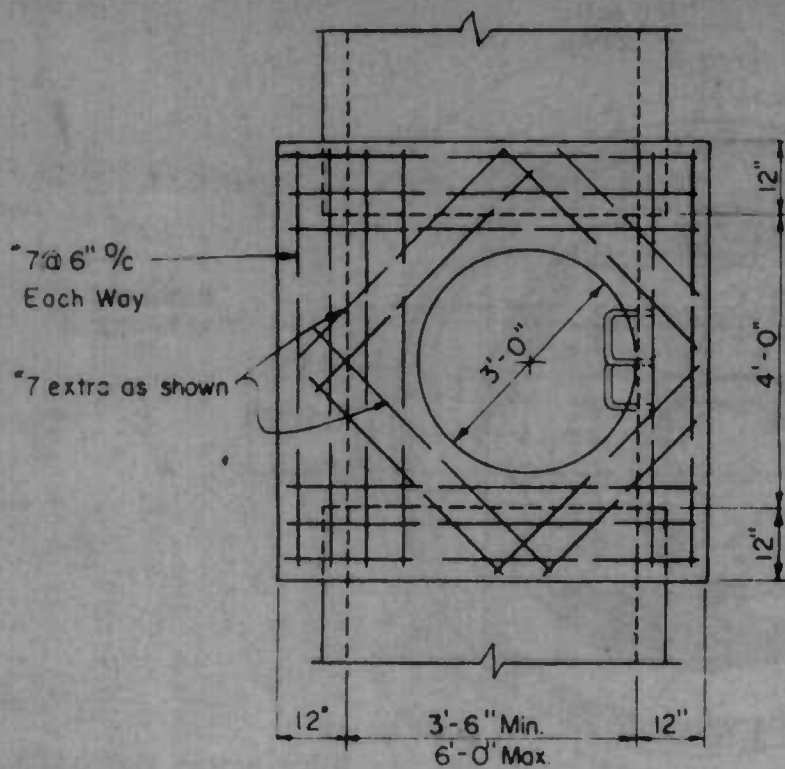
1. Walls, bottom slab and invert shall be brick or plain Class "A" Concrete poured in place.
2. Where A(cover) is greater than 4'-0" use Type "A" Manhole.
3. For pipe sizes 42" and larger use Type "C" Manhole.
4. Apply two coats of a Waterproof Bitumastic Compound over cement mortar.

Install Frame & 4 Dowels, 90° apart, then mortar

SECTION

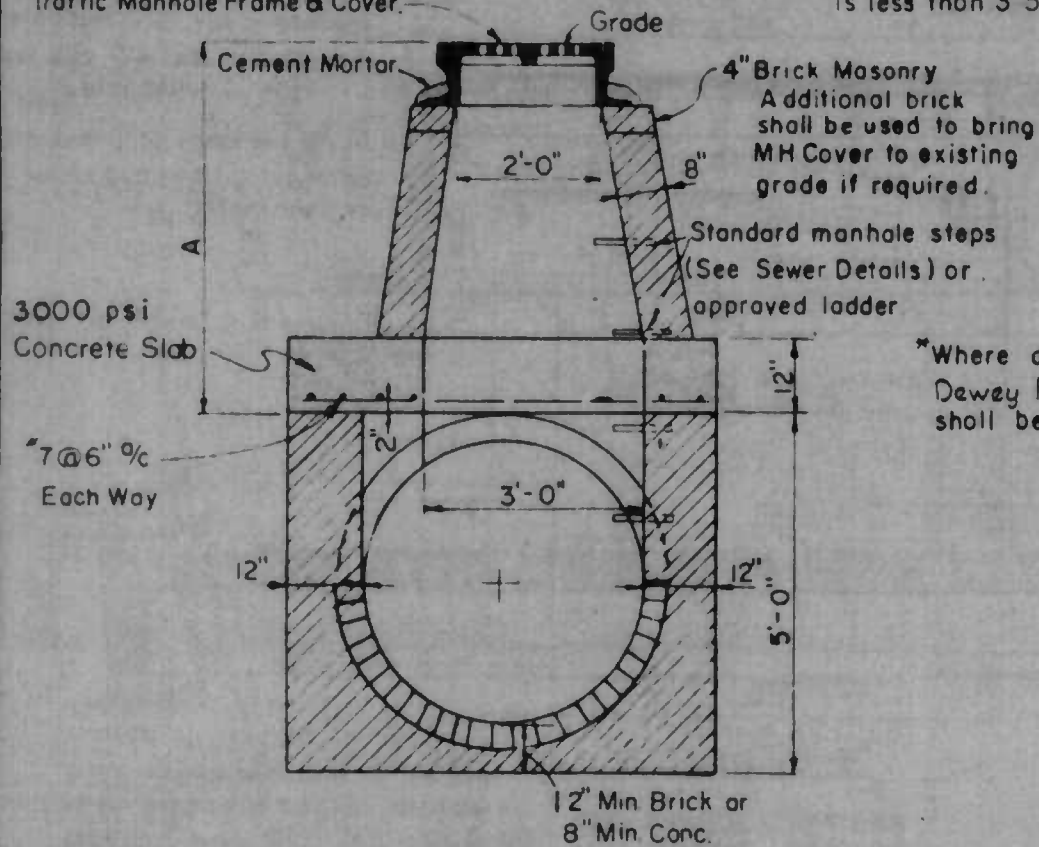
REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>E. J. Sanyk</i> DIRECTOR DIVISION OF ENGINEERING 1/1/66 DATE	REVIEWED	STANDARD STORM DRAINAGE DETAILS TYPE "B" MANHOLE (SHALLOW)	D-2A



TOP SLAB

Standard Storm Drain Heavy
Traffic Manhole Frame & Cover.*



SECTION

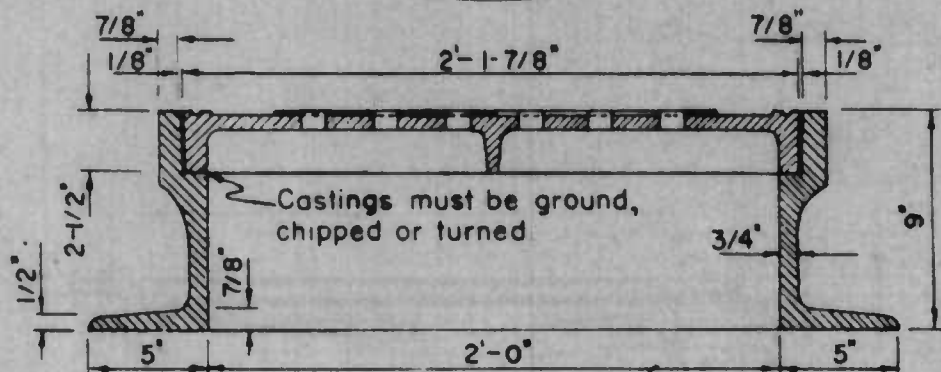
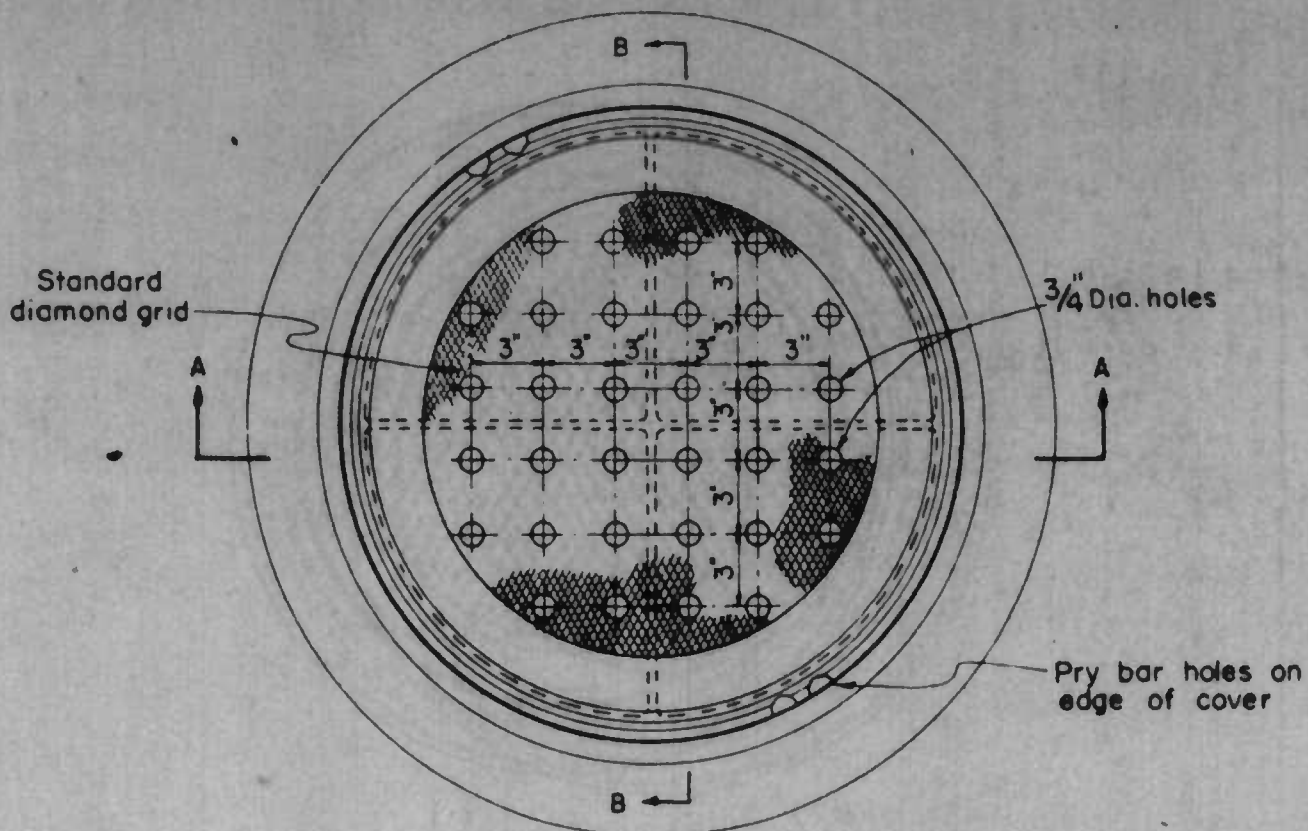
NOTES:

- 1 Walls, bottom slab and invert shall be brick or 3000 psi concrete poured in place
- 2 For pipes 36" and smaller use Type "A" or Type "B" Manhole. Use Type "B" where A (cover) is less than 3.5'

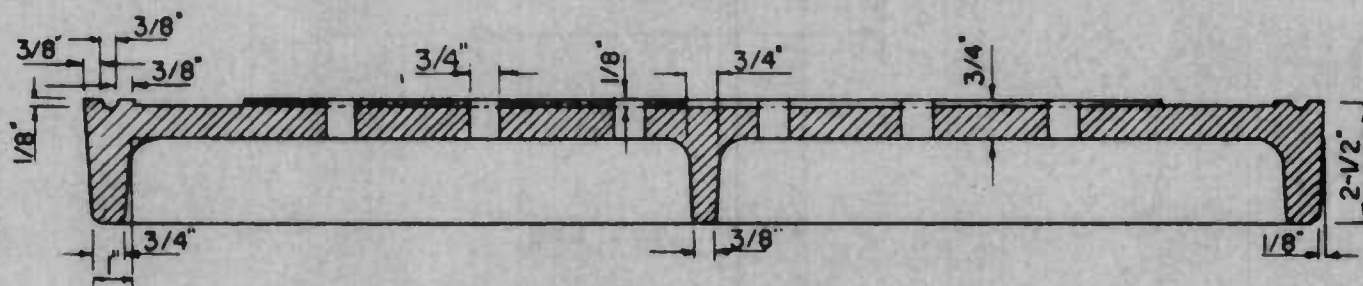
*Where directed, grating cover
Dewey Bros., Inc. MH-RCR-60
shall be substituted.

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>R. g. [Signature]</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS TYPE "C" MANHOLE 42" & LARGER PIPES	D - 3
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING			
	11/1/66			
	DATE			



SECTION "A-A"



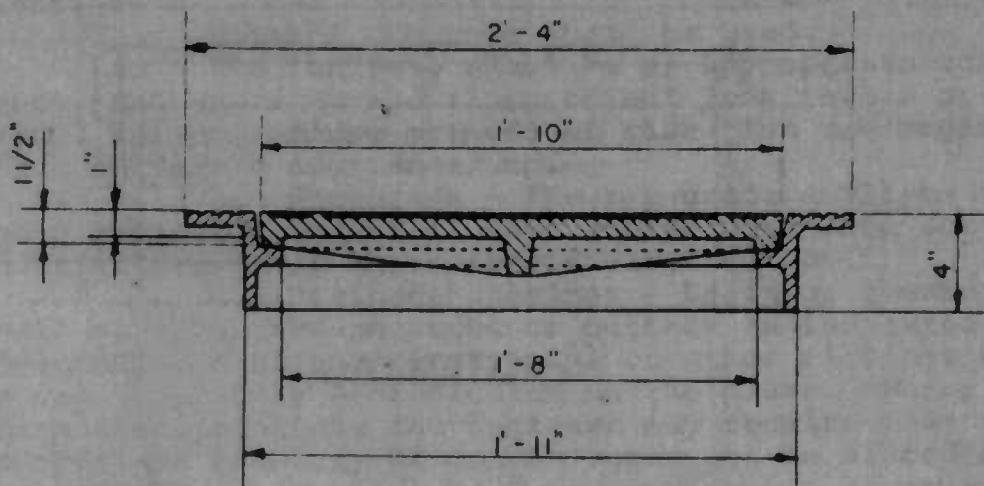
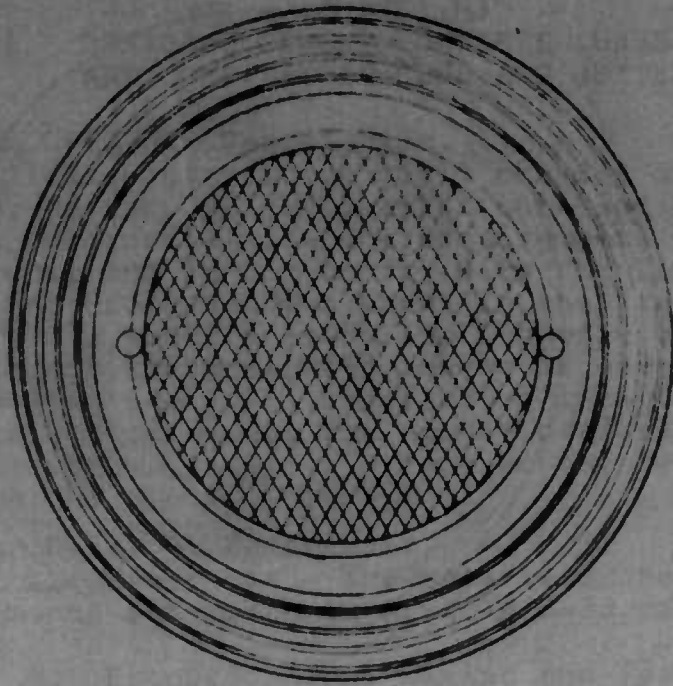
SECTION "B-B"

NOTE - Frame and cover for 54" and larger bends and junction chambers shall be Dewey Bros. Inc. - RCR-62C or equal with lettering and hole as shown for 2'-0" frame.

WT., COVER - 134 LBS.
WT., FRAME - 250 LBS.

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. J. Dwyer</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS HEAVY TRAFFIC MANHOLE FRAME AND COVER	D-4
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING			
	11/1/66			
	DATE			

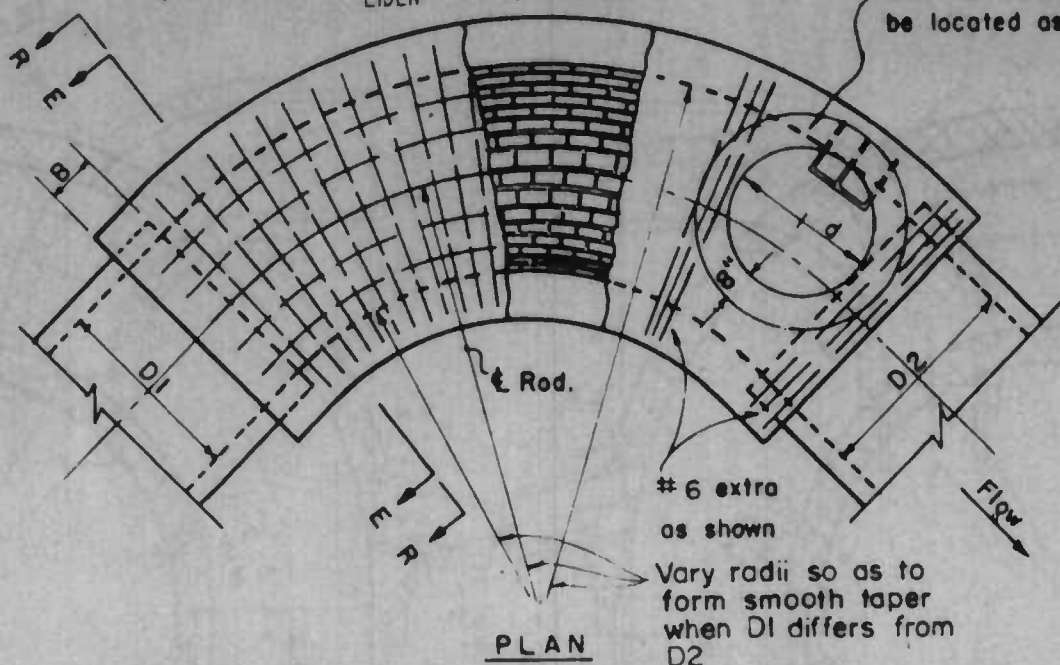


WEIGHT 185 LBS.

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. J. Dwyer</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS SIDEWALK FRAME AND COVER	D-5
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING			
	1/1/66 DATE			

Manhole if indicated on contract drawings shall be located as shown.

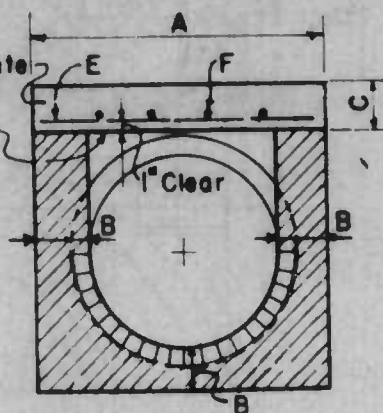


PLAN

NOTES:

1. Material Walls and bottom shall be brick or plain conc. see Section E-E (where 12" thickness is required, 8" Reinforced Concrete may be substituted, See Section R-R).
2. Loads Superload = A.A.S.H.O. H-20 Fill Load = 0 to 15 ft. Earth.
3. Manhole Details steps, frame, cover, walls and max. batter shall be as shown on contract drawings or standard manhole Type A. Also see Note 6.
4. Bend Data ϵ radius, B, C, and reinforcement shall be based upon D1 or D2 whichever is smaller.
5. Manhole Opening d shall be based on downstream pipe size D2.

3000 psi Concrete
Flush with outside
top of pipe.

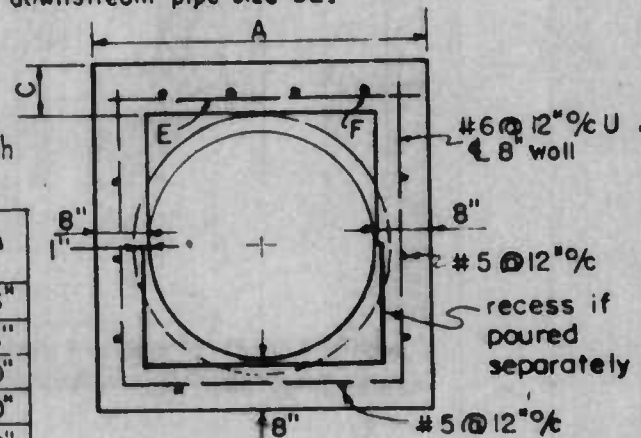


SECTION E-E

6. Frame and Grate for manhole on 54" and larger bends shall be Dewey Bros. Inc. -RCR-62 C or equal with lettering and hole as shown for 2'-0" frame.

Pipe Dio.	ϵ Radius	A	B	C	Bars E ϵ Spacing	Bars F	d ^(A)
30"	5'-0"	3'-10"	8"	8"	#5 @ 6" ϵ	3-#5	2'-6"
33"	6'-0"	4'-1"	8"	8"	#5 @ 6" ϵ	3-#5	2'-6"
36"	6'-0"	4'-4"	8"	8"	#5 @ 6" ϵ	3-#5	3'-0"
42"	7'-0"	4'-10"	8"	10"	#5 @ 6" ϵ	4-#5	3'-0"
48"	8'-0"	5'-4"	8"	10"	#5 @ 6" ϵ	4-#5	3'-0"
54"	9'-0"	6'-6"	12"	10"	#5 @ 6" ϵ	5-#5	3'-0" +
60"	10'-0"	7'-0"	12"	12"	#6 @ 8" ϵ	6-#5	3'-0" +
66"	11'-0"	7'-6"	12"	12"	#6 @ 8" ϵ	7-#5	3'-0" +
72"	12'-0"	8'-0"	12"	12"	#6 @ 8" ϵ	7-#5	3'-0" +

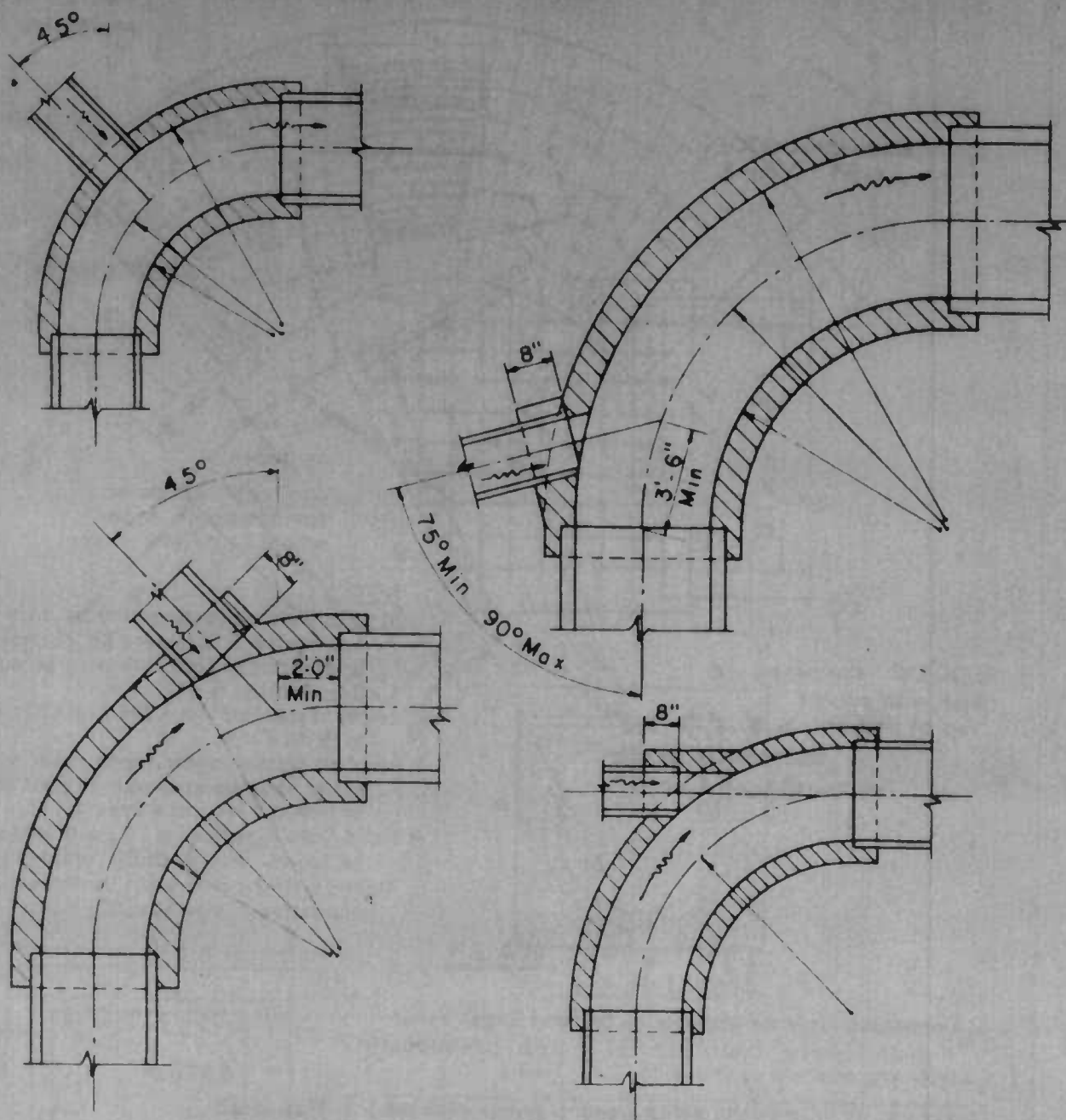
(x) See note #1, (*) See note #4, (A) See note #5
(+) Special cover. See note #6 above.



SECTION R-R

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. J. Dwyer</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS	D-6
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING		BEND STRUCTURE	
	11/1/66 DATE			

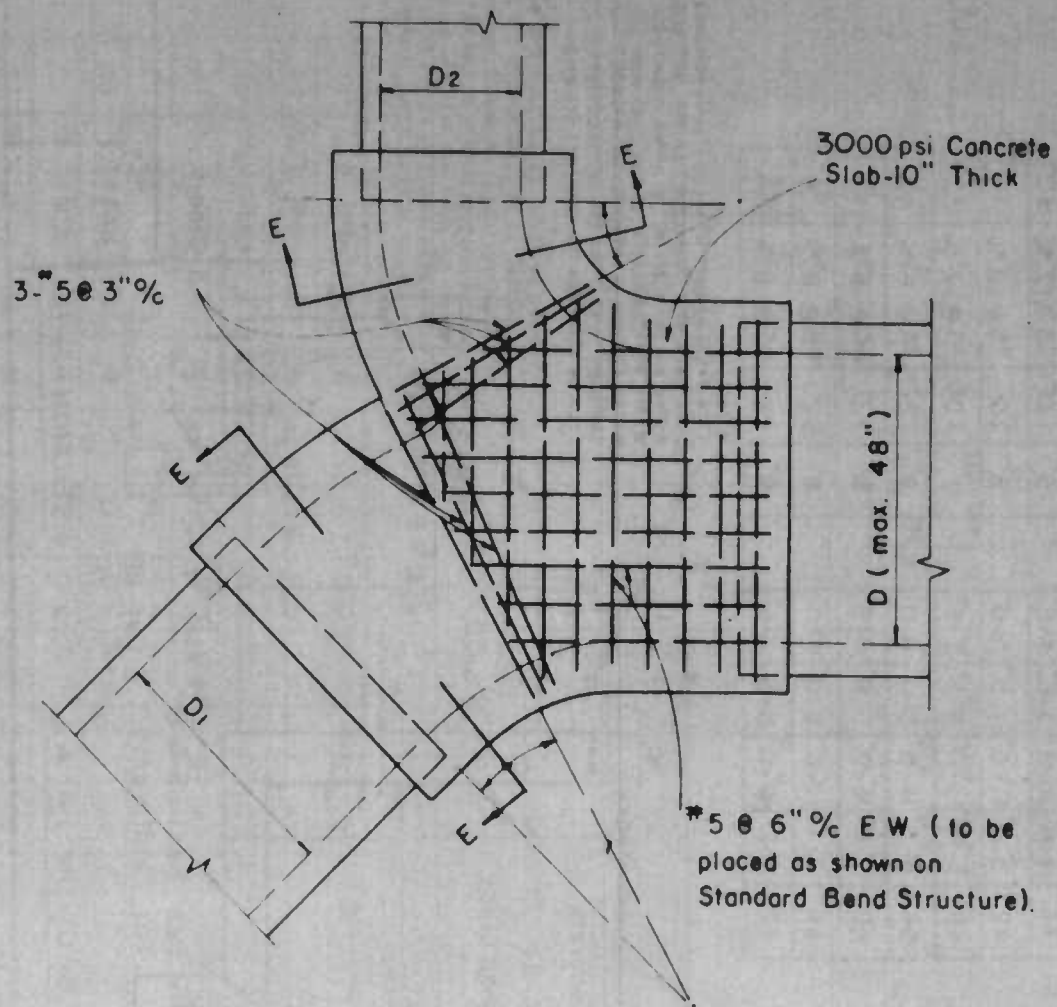


Notes

Manhole location, size and details, concrete and reinforcing steel requirements, center line radius and other details shall be in accordance with Bend Structure Detail (D-6)

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>G. F. Dwyer</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS CONNECTION LOCATIONS TO BEND STRUCTURES	D-7
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING			
	1/1/66			
	DATE			

PLAN

NOTES-

Sections E-E (between limits shown) shall conform to Standard Bend Structure (See Standard Detail)

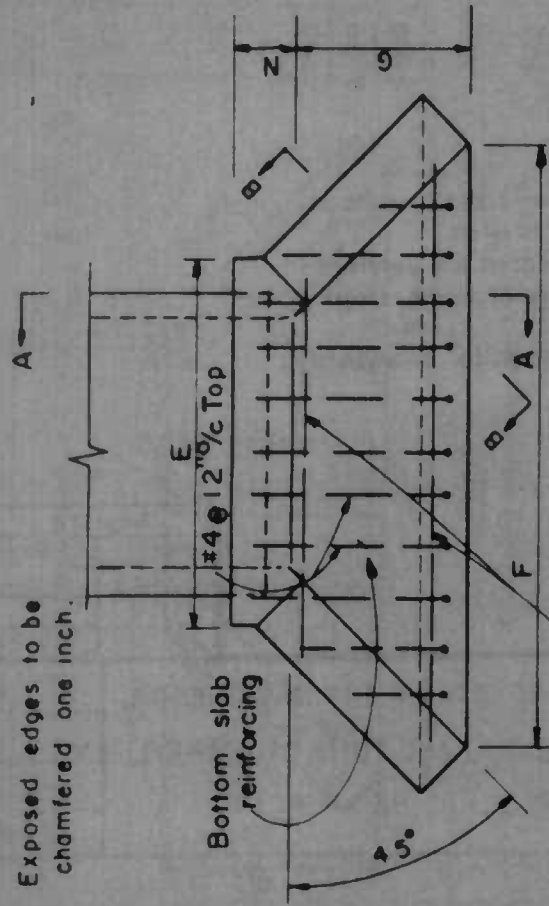
Where manhole is required (as indicated on Contract Drawings), manhole location and extra reinforcing shall be as shown on Standard Bend Structure

Walls and bottom shall conform to Standard Bend Structure.

REVISED	
DATE	BY

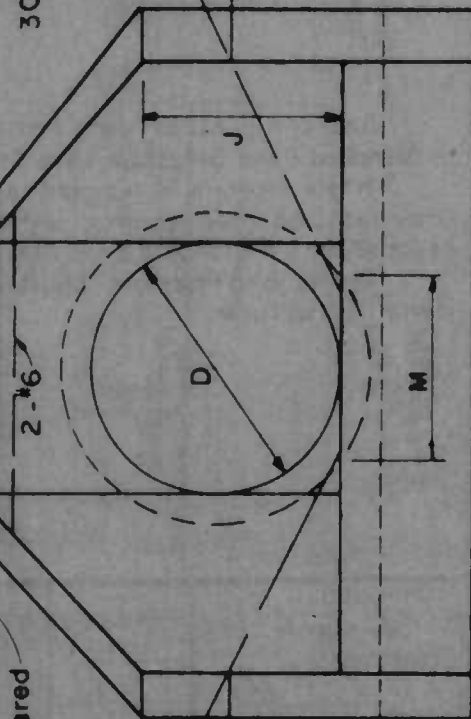
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>R. G. [Signature]</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAIL TYPE I JUNCTION CHAMBER TOP SLAB REINFORCING	D-8
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING			
	11/1/66			
	DATE			

Exposed edges to be chamfered one inch.



PLAN

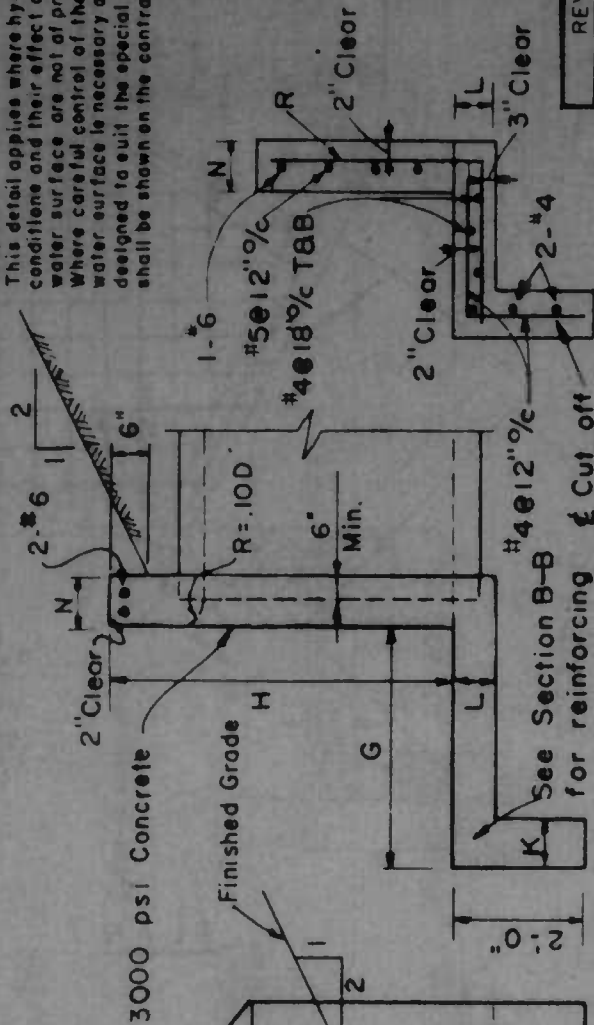
#4 @ 18" c T&B Staggered



M = Width of Ditch

FRONT ELEVATION

Note: This detail applies where hydraulic entrance conditions and their effect on the upstream water surface are not of prime importance. Where careful control of the upstream water surface is necessary an endwall designed to suit the special conditions shall be shown on the contract drawings.



SECTION A-A

SECTION B-B

D	E	F	G	H	J	K	L	R	N
24	3'-8"	8'-0"	3'-0"	3'-6"		8"	8"	#5 @ 12" c	8"
27	3'-11"	8'-3"	3'-0"	3'-9"		8"	8"	#5 @ 12" c	10"
30"	4'-2"	8'-6"	3'-0"	4'-0"		8"	8"	#5 @ 12" c	10"
36"	4'-8"	10'-0"	3'-6"	4'-6"		8"	10"	#5 @ 12" c	10"
42"	5'-3"	11'-6"	4'-0"	5'-0"		8"	10"	#5 @ 12" c	10"
48"	5'-10"	13'-0"	4'-6"	5'-6"		8"	10"	#5 @ 12" c	12"
54"	6'-5"	14'-6"	5'-0"	6'-0"		9"	12"	#6 @ 8" c	12"
60"	7'-0"	16'-0"	5'-6"	6'-6"		9"	12"	#6 @ 8" c	12"
66"	7'-7"	17'-6"	6'-0"	7'-0"		9"	12"	#6 @ 8" c	14"
72"	8'-2"	19'-0"	6'-6"	7'-6"		9"	12"	#6 @ 8" c	14"

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS

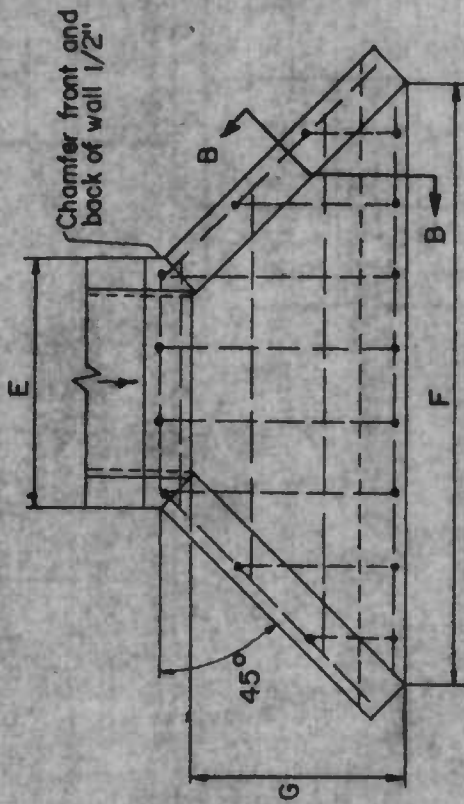
APPROVED
R. G. Calogian
 DIRECTOR
Harold Hamilton
 DIVISION OF ENGINEERING
 DATE 11/1/66

REVIEWED

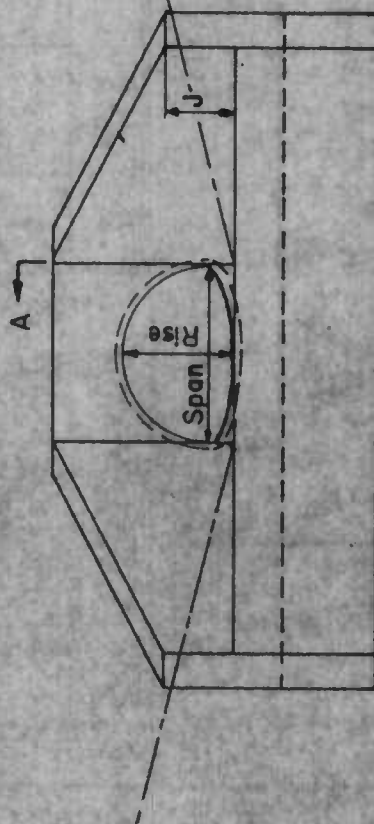
STANDARD STORM DRAINAGE DETAILS

TYPE "A" HEADWALL

D-9



PLAN
(Showing reinforcement)



ELEVATION

Note:

1. Chamfer exposed edges 1" x 1"
2. Concrete quantities to be used for estimating only.
3. Headwall to be parallel to § of roadway.

HARFORD
COUNTY
DEPARTMENT
OF
PUBLIC WORKS

APPROVED

DIRECTOR

BUREAU OF ENGINEERING

DATE

REVIEWED

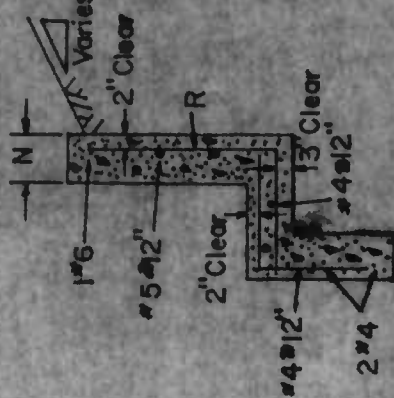
DATE

EQRD	SPAN	RISE	A	B	E	F	G	J	K	L	N	R	CONC'D
18"	22"	13"	2'-1"	2'-0"	2'-10"	7'-10"	3'-0"	1'-0"	8"	8"	8"	#5@12"	1.48
24"	29"	18"	2'-6"	2'-0"	3'-5"	8'-5"	3'-0"	1'-0"	8"	8"	8"	#5@12"	1.52
30"	36"	22"	2'-10"	2'-0"	4'-0"	9'-0"	3'-0"	1'-4"	8"	8"	8"	#5@12"	1.68
36"	43"	27"	3'-3"	2'-0"	4'-7"	9'-7"	3'-0"	1'-8"	8"	10"	8"	#5@12"	1.96
42"	50"	31"	3'-7"	2'-0"	5'-2"	10'-2"	3'-0"	2'-0"	8"	10"	8"	#5@12"	2.13
48"	58"	36"	4'-0"	2'-0"	5'-10"	11'-10"	3'-6"	2'-1"	8"	10"	8"	#5@12"	2.76
54"	65"	40"	4'-4"	2'-0"	6'-5"	13'-1"	3'-10"	2'-3"	9"	12"	10"	#5@12"	3.69
60"	72"	44"	4'-8"	2'-0"	7'-0"	14'-4"	4'-2"	2'-8"	9"	12"	10"	#5@12"	4.16

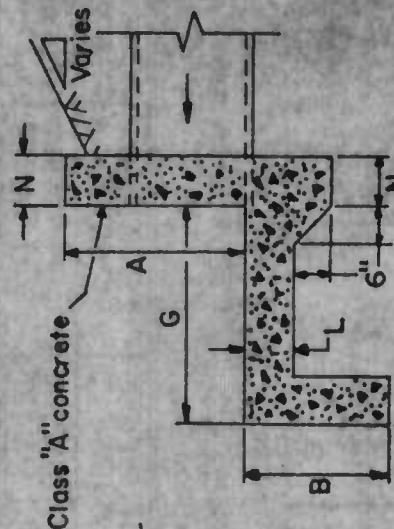
Based on 2:1 channel side slopes

LIBER

PAGE 155



SECTION B-B



SECTION A-A

(Reinforcing not shown
Similar to B-B)

REVISIONS

DATE

BY

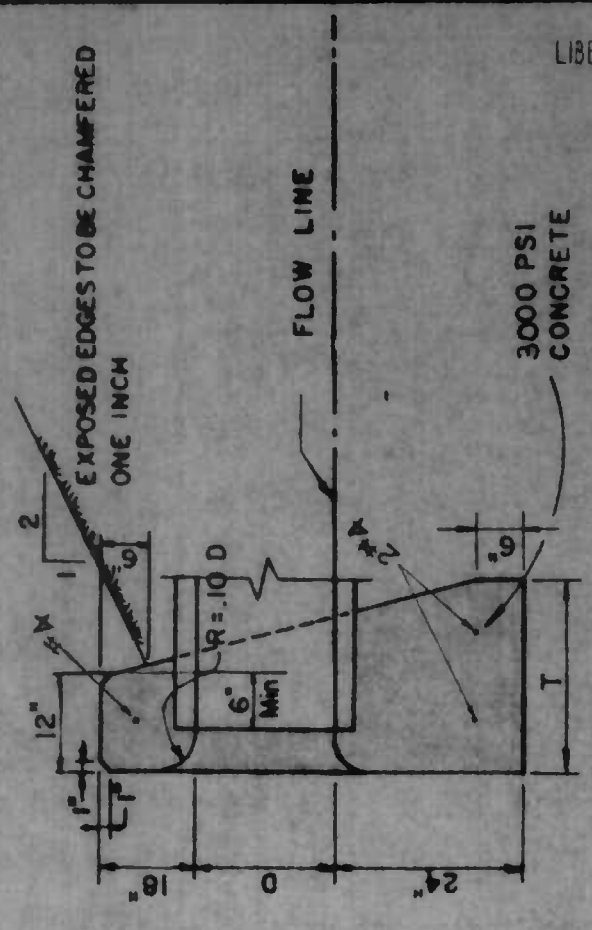
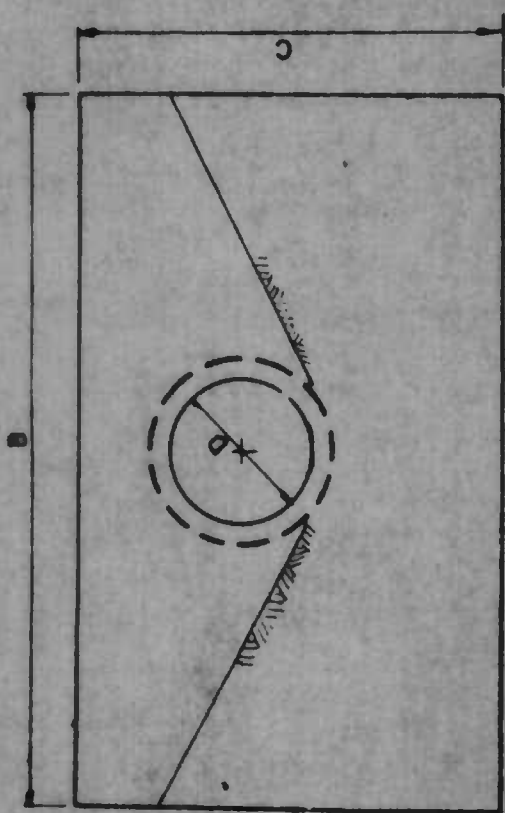
STANDARD STORM DRAINAGE DETAILS

TYPE "A" HEADWALL

METAL PIPE ARCH

D-9A

11/1/66 DATE



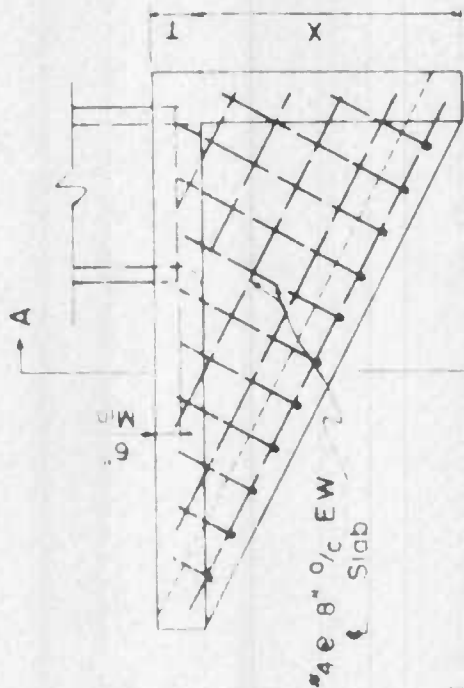
LIBER 2 PAGE 155

BOTH				1-1/2:1 SLOPE ONLY		2:1 SLOPE ONLY	
D	C	T	B	VOLUME CU. YDS	B	VOLUME CU. YDS	
12"	4'-6"	2'-0"	4'-0"	0.98'	5'-0"	1.24	
15"	4'-9"	2'-1"	5'-0"	1.28	6'-3"	1.62	
18"	5'-0"	2'-2"	6'-0"	1.66	7'-6"	2.11	
21"	5'-3"	2'-2"	7'-0"	1.99	8'-9"	2.55	
24"	5'-6"	2'-3"	8'-0"	2.42	10'-0"	3.11	
27"	5'-9"	2'-4"	9'-0"	2.94	11'-3"	3.73	
30"	6'-0"	2'-5"	10'-0"	3.45	12'-6"	4.42	
36"	6'-6"	2'-6"	11'-0"	4.08	14'-0"	5.12	
42"	7'-0"	2'-9"	13'-0"	4.28	15'-0"	6.55	

REVISED	DATE	BY

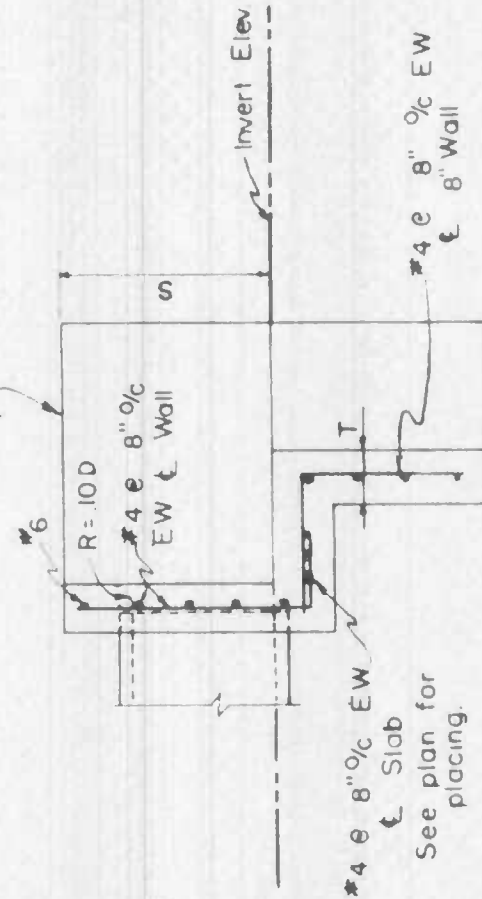
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. J. [Signature]</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS TYPE "B" HEADWALL	D-10
	<i>[Signature]</i> DIVISION OF ENGINEERING	DATE		

D	S	T	1 1/2:1 SLOPE ONLY		2:1 SLOPE ONLY	
			W	X	VOLUME CU YDS.	VOLUME CU YDS.
12"	2'-0"	8"	4'-3"	2'-3"	1.75	2.22
15"	2'-3"	8"	4'-10"	2'-7"	2.04	2.60
18"	2'-6"	8"	5'-6"	3'-0"	2.37	3.01
21"	2'-9"	10"	6'-0"	3'-3"	2.64	3.44
24"	3'-0"	10"	6'-8"	3'-8"	3.02	3.90
27"	3'-3"	12"	7'-0"	3'-9"	3.22	4.37
30"	3'-6"	12"	7'-6"	4'-0"	3.52	4.87



Note:
All exposed edges to be
chamfered one inch

3000 psi Concrete



SECTION "A-A"

FRONT ELEVATION

REVISED	DATE	BY

STANDARD STORM DRAINAGE DETAILS

TYPE "C" HEADWALL

D-11

HARFORD
COUNTY
DEPARTMENT
OF
PUBLIC WORKS

APPROVED

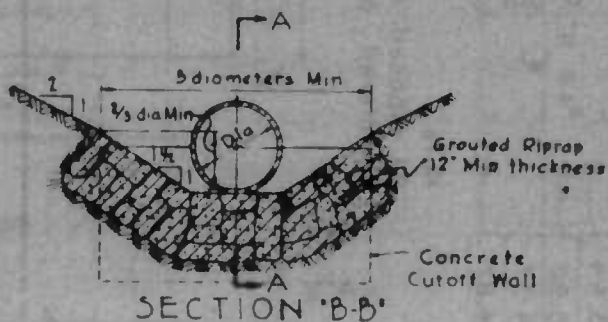
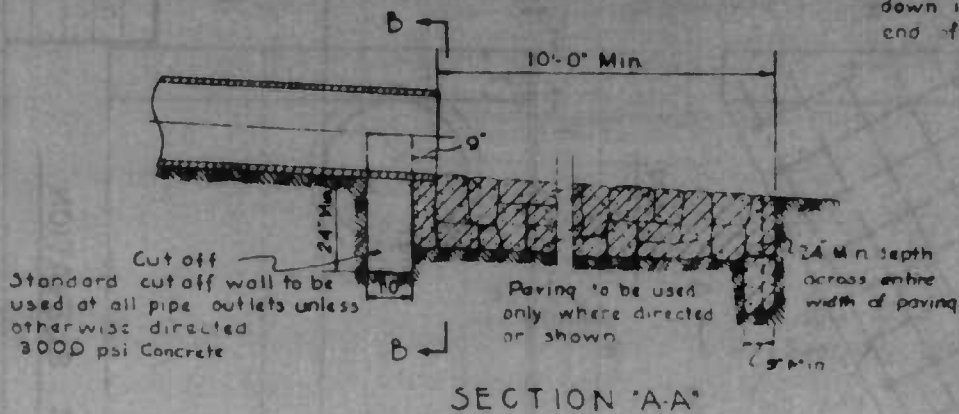
DIRECTOR

DIVISION OF ENGINEERING

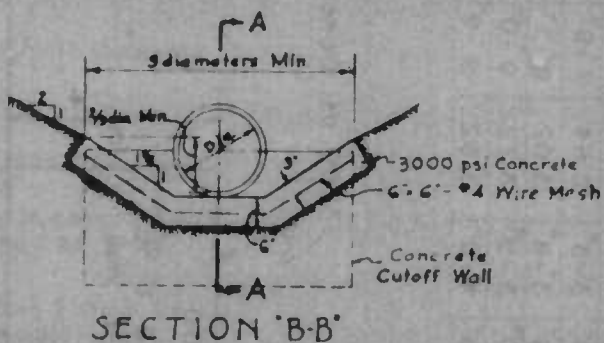
DATE

REVIEWED

When concrete paving is used
wire mesh shall be extended
down into cutoff wall at lower
end of paving.



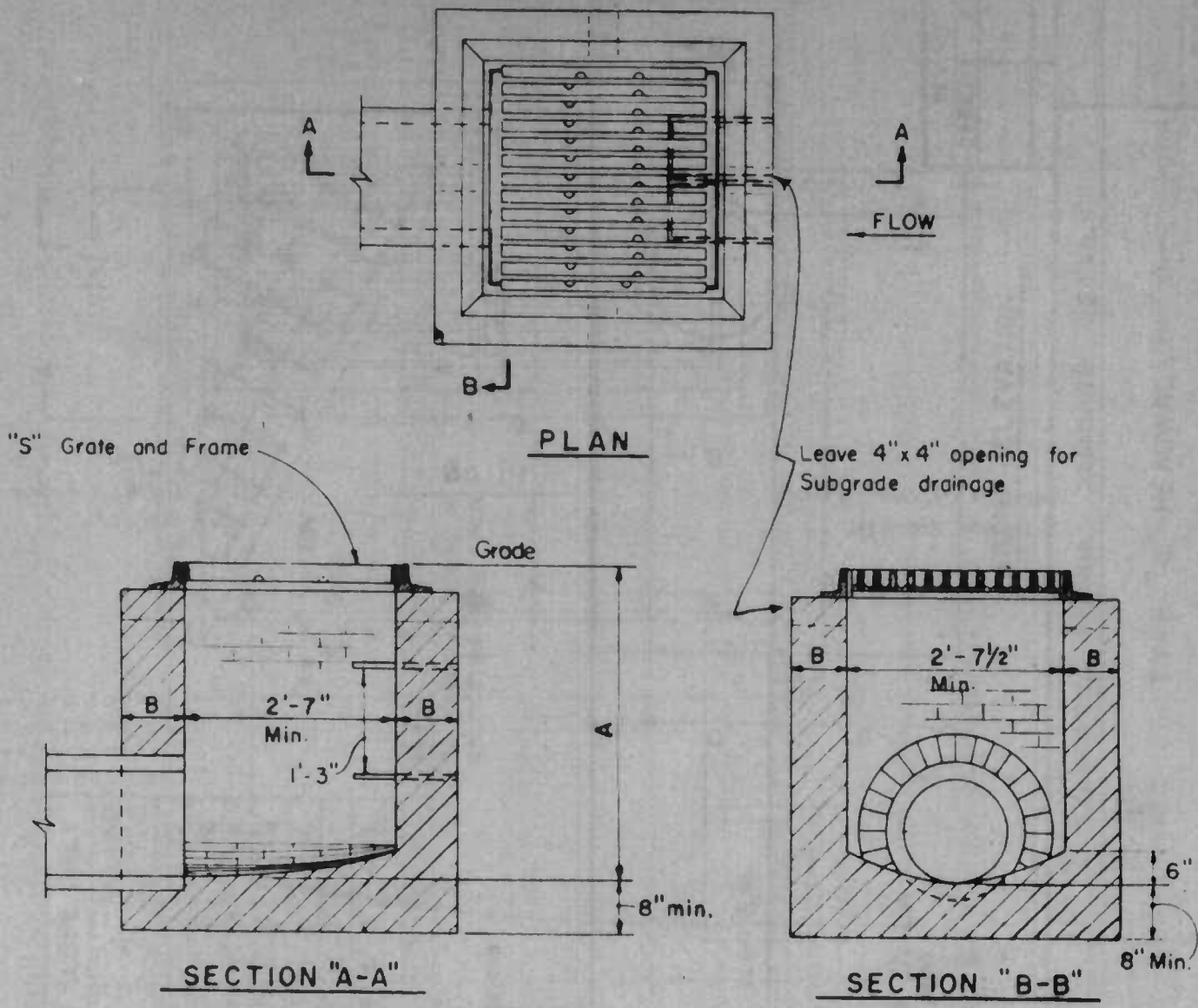
CUTOFF WALL AND RIPRAP PAVING



CUTOFF WALL AND CONCRETE PAVING

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>R. G. O'Connell</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS CUTOFF WALL & PAVING	D-12
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING			
	11/1/66			
	DATE			

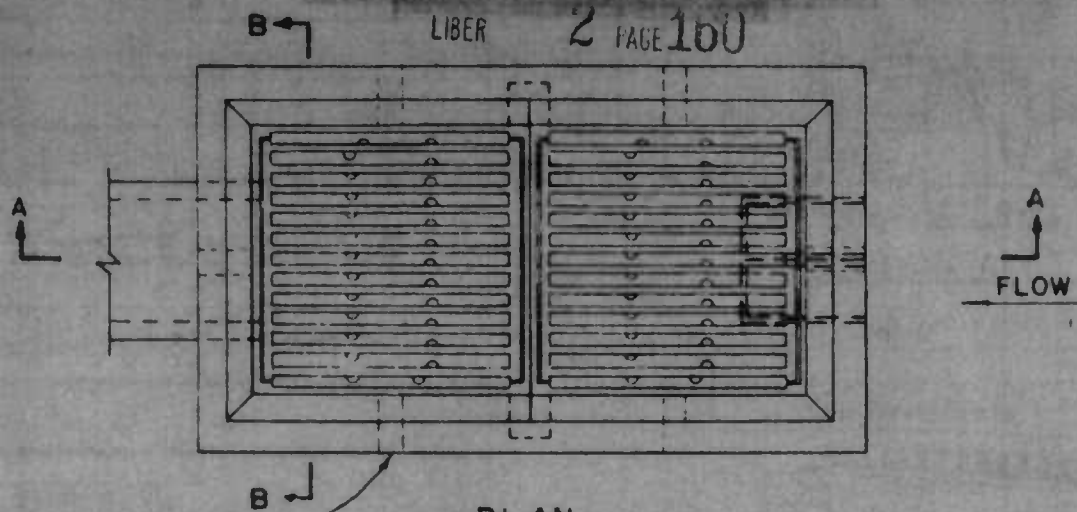


Notes:

- 1 Inlet shall be Brick or 3000 psi Concrete.
- 2 B = 8" where A is less than 8'
B = 12" where A is 8' to 14'.
- 3 Top 4" of walls shall be brick masonry
Additional brick shall be used to bring
the grate to existing grade if required.
- 4 Where brick is used Invert shall be brick
laid on edge.
- 5 Bench (as per Type A Manhole) shall be
built into inlet where drains 24" and
larger run through inlet.
- 6 Where A is 3'-6" or greater standard manhole steps
(Sanitary Sewer Section) shall be installed as
shown.

REVISED	
DATE	BY

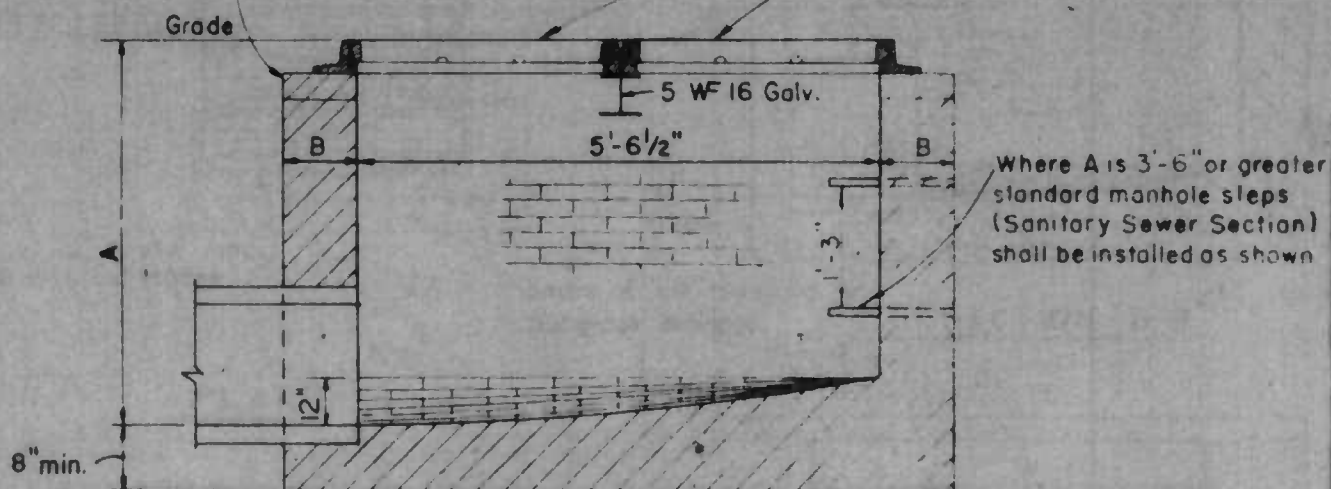
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>R. J. [Signature]</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS TYPE "S" INLET	D-13
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING			
	1/1/66			
	DATE			



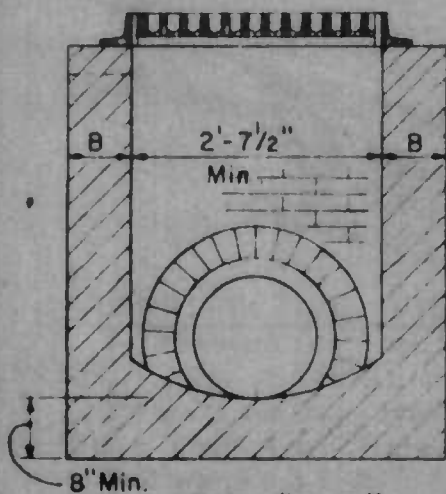
Leave 4"x4" opening for
Subgrade drainage.

PLAN

"S" Grate & Frame with
cut Flanges



SECTION "A-A"



SECTION "B-B"

Notes:

- Invert shall be Brick or 3000 psi Concrete
- Walls shall be Brick (Br)
3000 psi Concrete (P.C.)
or Reinforced Concrete (R.C.)
See Table for dimensions.
- Reinforcing = #4 @ 10" E.W. in $\frac{1}{2}$ of walls.
Reinforcing continuous at corners. All laps 1'-4".
- Top 4" of walls shall be brick masonry.
Additional brick shall be used to bring
the grate to existing grade if required.
- Where brick is used, invert shall be brick
laid on edge.
- Bench (as per Type A Manhole) shall be
built into inlet where drains 24" and
larger run through inlet.

A	B	Walls
< 6'	8" Br or P.C.	
6' to 10'	12" Br. or P.C.	
6' to 15'	8" R.C.	

REVISED	
DATE	BY

HARFORD
COUNTY
DEPARTMENT
OF
PUBLIC WORKS

APPROVED

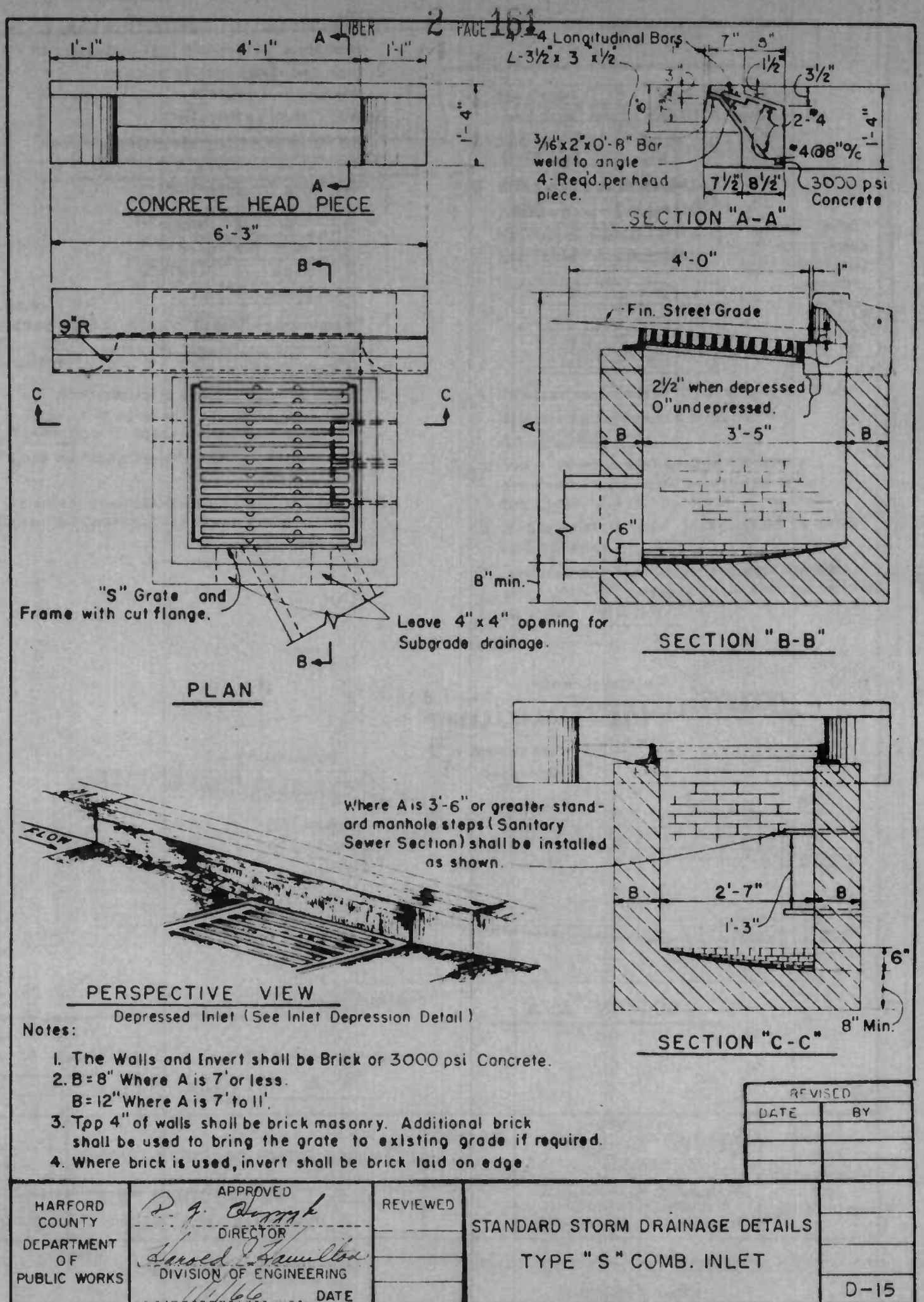
R. J. [Signature]
DIRECTOR
Harold J. Hamilton
DIVISION OF ENGINEERING
11/1/66 DATE

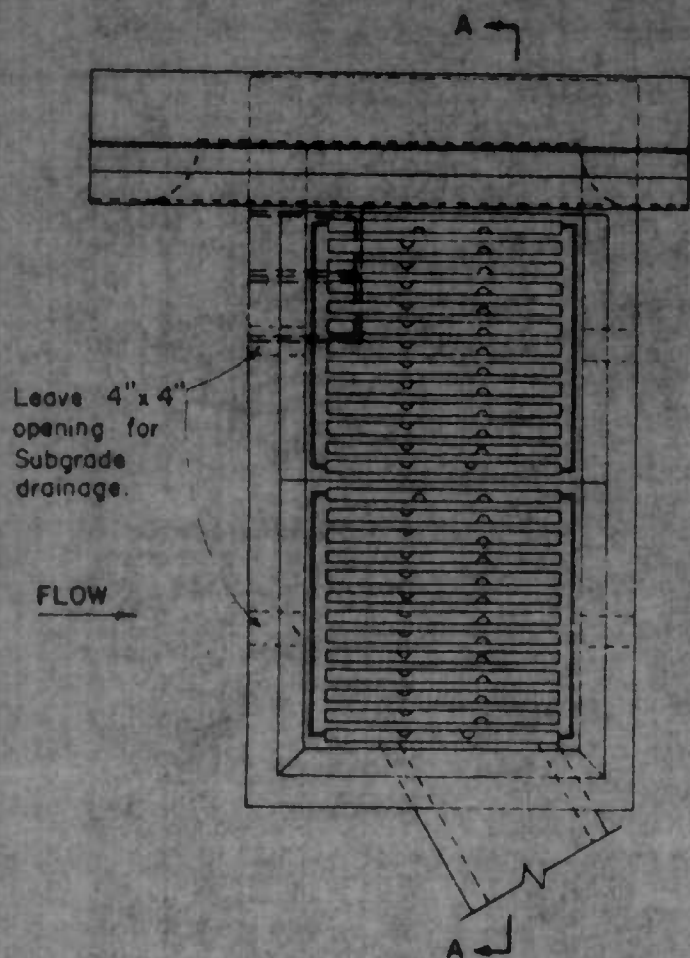
REVIEWED

STANDARD STORM DRAINAGE DETAILS

DOUBLE TYPE "S" INLET

D-14





Notes:

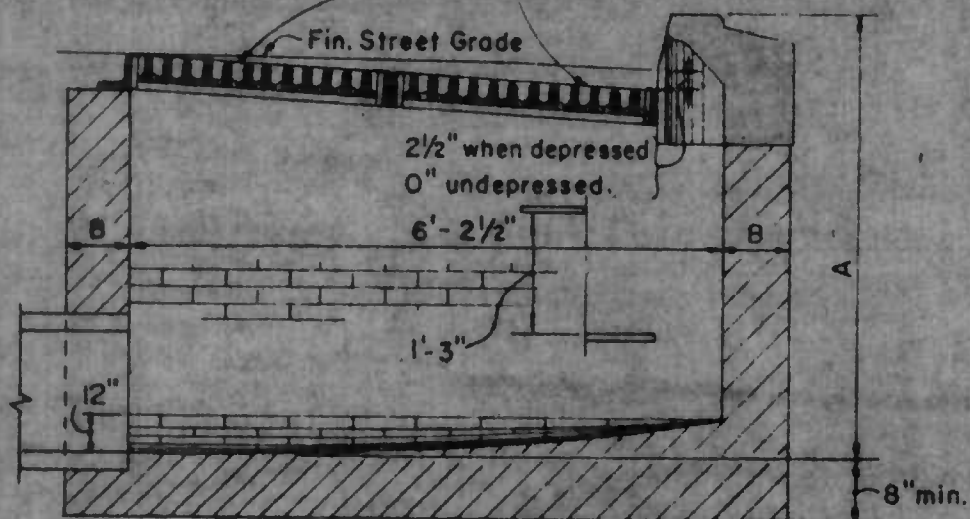
1. See Detail D-15 perspective view, headpiece details and Inlet cross section.
2. Slab and invert shall be Brick or 3000 psi concrete
3. Walls shall be Brick (Br.), 3000 psi Concrete (P.C.) or Reinforced Concrete (R.C.). See Table for dimensions.

A	B	Walls
< 5'	8"	Br or P.C.
5' to 9'	12"	Br. or P.C.
9' to 14'	8"	R.C. ♦

4. *Reinforcing = #4 @ 10" o/c E.W. in E. of Walls
Reinforcing continuous at corners.
All laps 1'-4"
5. Top 4" of walls shall be brick masonry.
Additional brick shall be used to bring the grate to existing grade if required
6. Where brick is used, invert shall be brick laid on edge.
7. Where A is 3'-6" or greater standard manhole steps (Sanitary Sewer Section) shall be installed as shown.

PLAN

"S" Grate & Frame
with cut Flanges.

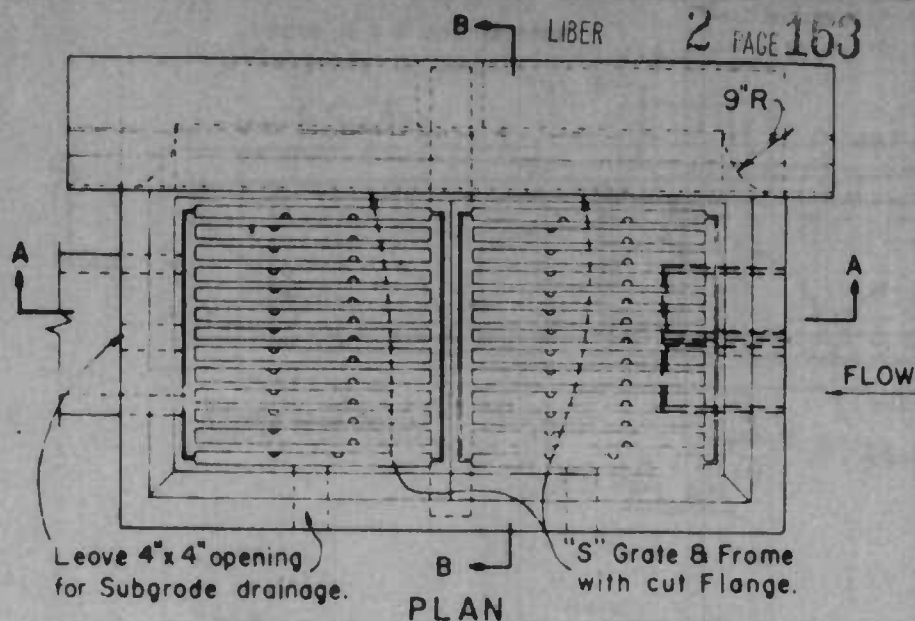


SECTION "A-A"

REVISED

DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>R. J. Dwyer</i> DIRECTOR <i>Harold J. Hamilton</i> DIVISION OF ENGINEERING 11/1/66 DATE	REVIEWED	STANDARD STORM DRAINAGE DETAILS DOUBLE TYPE "S" COMB. INLET (normal to curb)	D-16

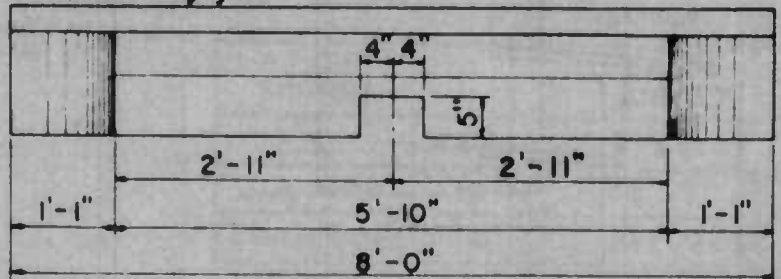
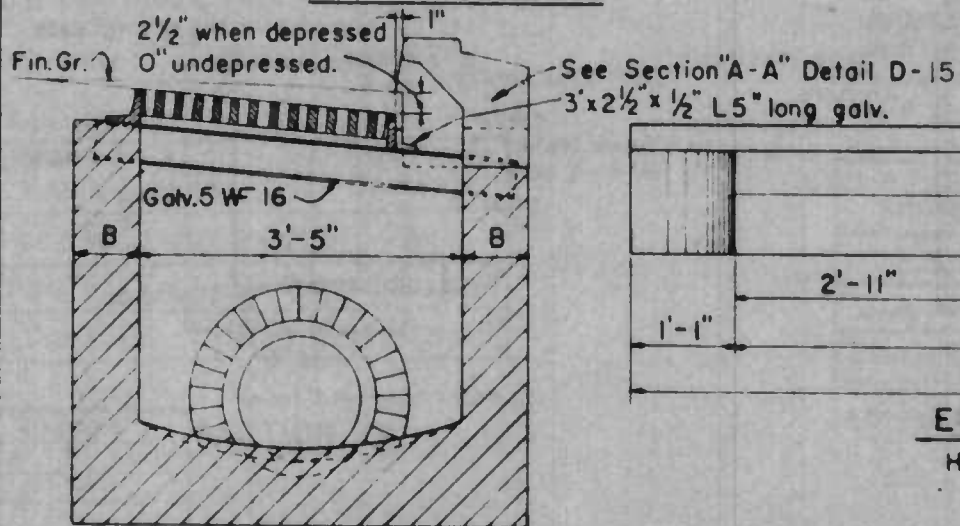
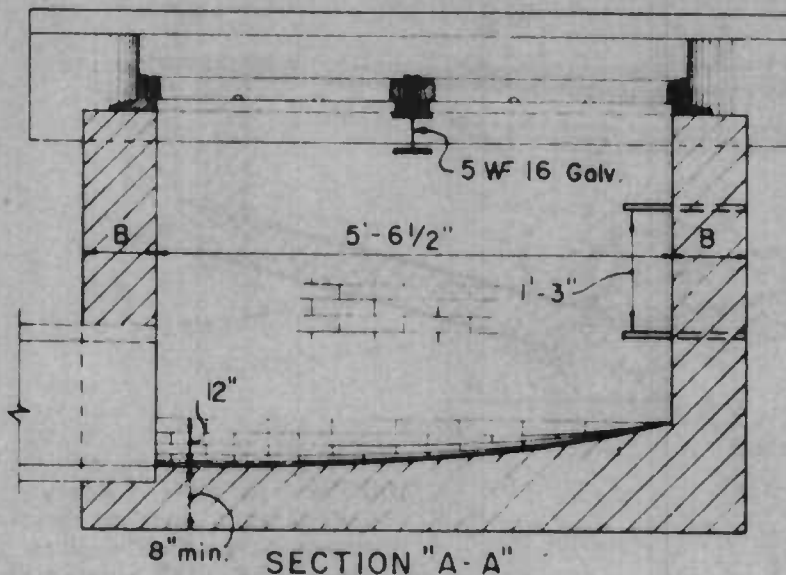


Notes:

1. Invert shall be brick or 3000 psi Concrete.
2. Walls shall be Brick (Br.), 3000 psi Concrete (P.C.) or Reinforced Concrete (R.C.). See Table for dimensions.

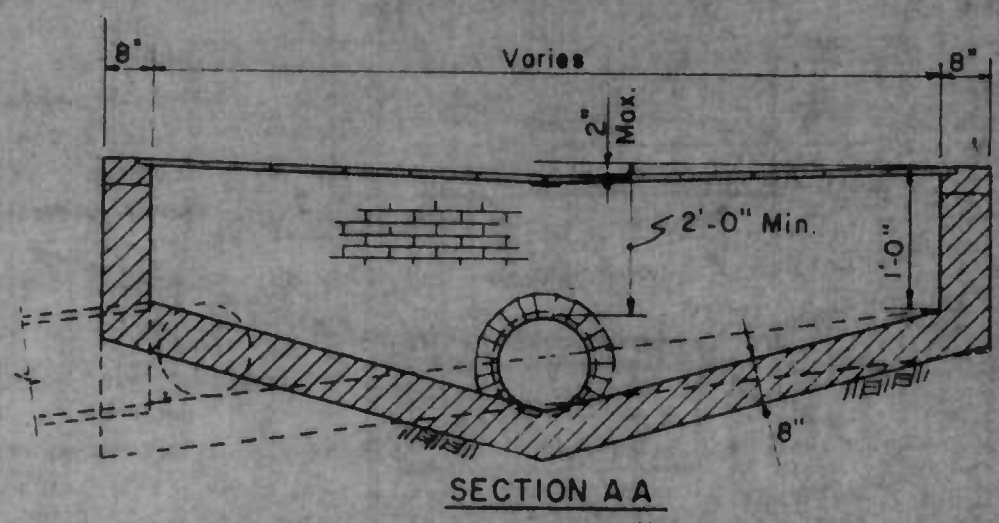
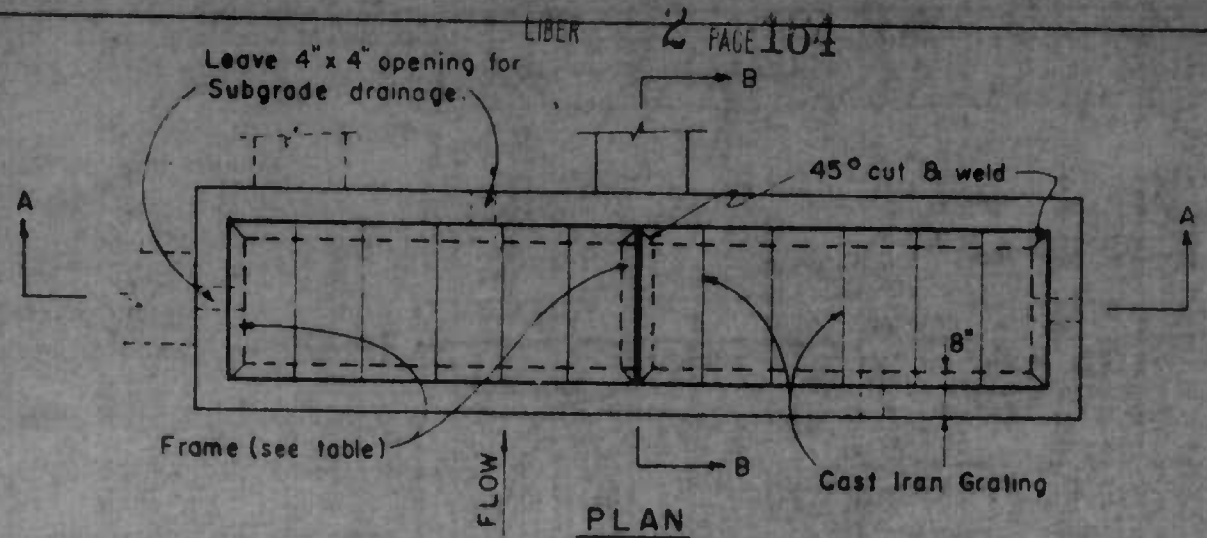
A	B	Walls
< 5'	8"	Br. or P.C.
5' to 9'	12"	Br. or P.C.
5' to 14'	8"	R.C. *

3. * Reinforcing = $\frac{1}{4}$ " @ 10" $\frac{1}{2}$ E.W. in $\frac{1}{4}$ of walls Reinforcing continuous at corners. All laps 1'-4".
4. Top 4" of walls shall be brick masonry. Additional brick shall be used to bring the grate to existing grade if required.
5. Where brick is used, invert shall be brick laid on edge.
6. Inlet to be benched when pipes pass thru.
7. Where A is 3'-6" or greater standard manhole steps (Sanitary Sewer Section) shall be installed as shown



REVISED	
DATE	BY

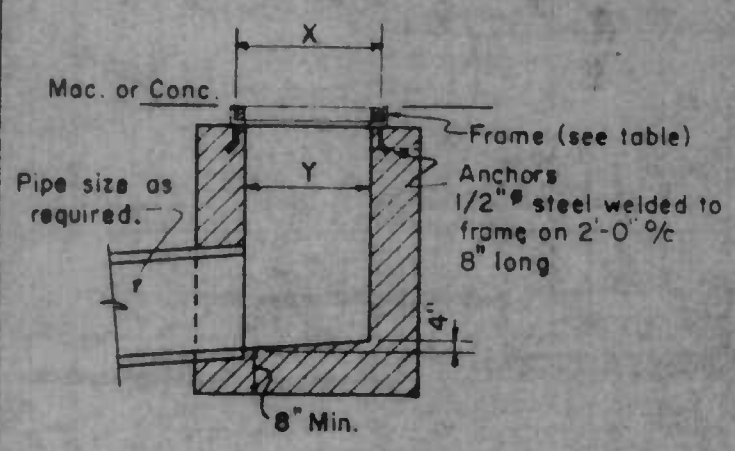
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>[Signature]</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS DOUBLE TYPE "S" COMB. INLET (parallel to curb)	D-17
	<i>[Signature]</i> DIVISION OF ENGINEERING			
	DATE 11/1/66			



SECTION AA

Notes:

1. Invert shall be brick or 3000 psi concrete masonry.
2. Top 4" of walls shall be brick masonry.
3. Maximum depth of wall shall be 3'-6" where outlet pipe requires greater depth, drop section shall be formed around pipe.
4. Where brick is used, invert shall be brick laid on edge.



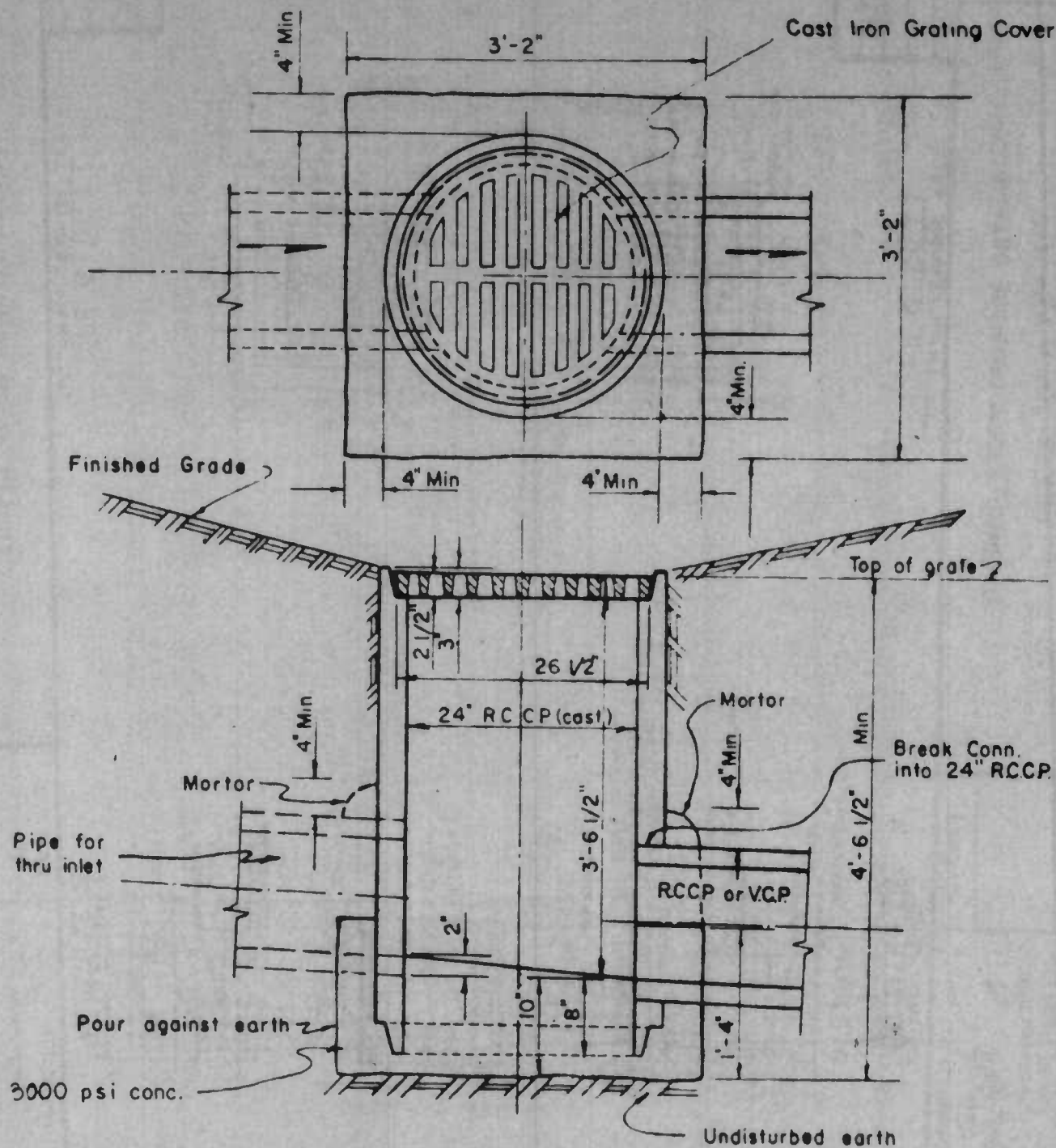
SECTION BB

TYPE GRATING	X	Y	FRAME ANGLES
S	2'-9"	2'-7"	ST3.5 I 10
*Dewey CH-BN-80	2'-0"	1'-7"	2 1/2" x 2 1/2" x 3/8"
*Dewey CH-BN-6	1'-6"	1'-1"	2" x 2 1/2" x 3/8"

* Or approved equal

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>P. G. Dwyer</i> DIRECTOR	REVIEWED _____ _____ _____	STANDARD STORM DRAINAGE DETAILS TYPE "C" INLET	_____ _____ _____ D-18
	DIVISION OF ENGINEERING <i>Harold J. Hamilton</i>	DATE 1/1/66	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

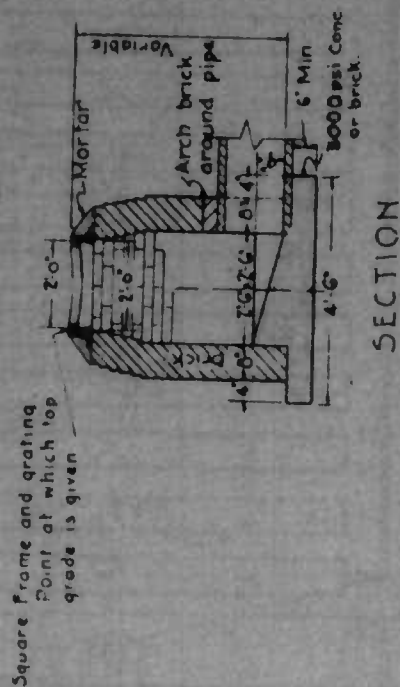
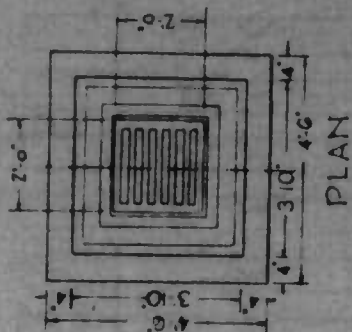
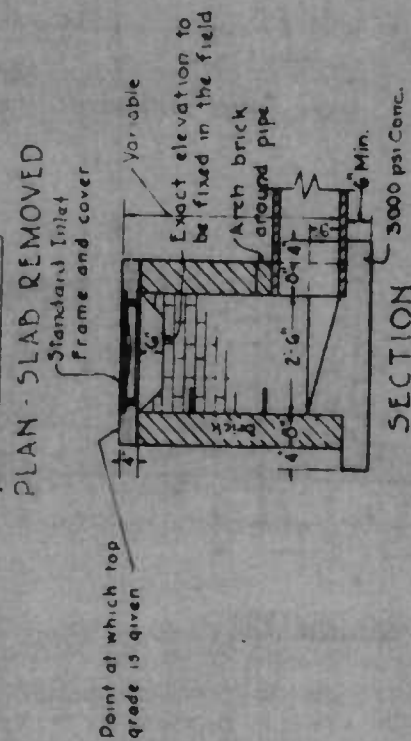
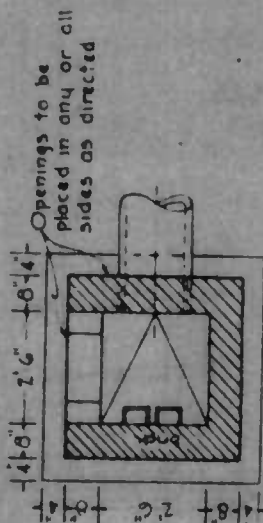
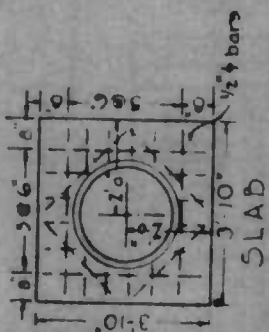


NOTE:

Inlet to be used in a swale or sump.
 Max. capacity under 0.25' head = 3 c.f.s.
 To be used with 15" conn. or smaller
 Not to be used in roadway or parking
 area.

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. G. Dwyer</i> DIRECTOR <i>Harold J. Hamilton</i> DIVISION OF ENGINEERING 1/1/66 DATE	REVIEWED	STANDARD STORM DRAINAGE DETAILS YARD TYPE INLET	D-19



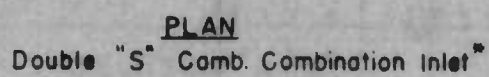
TYPE D INLET
FOR GRASS AREAS

TYPE G INLET
FOR SMALL DRAINAGE AREAS

STANDARD STORM DRAINAGE DETAILS

INLETS "D" & "G"

D-20



SECTION A-A

SECTION B-B

SECTION C-C

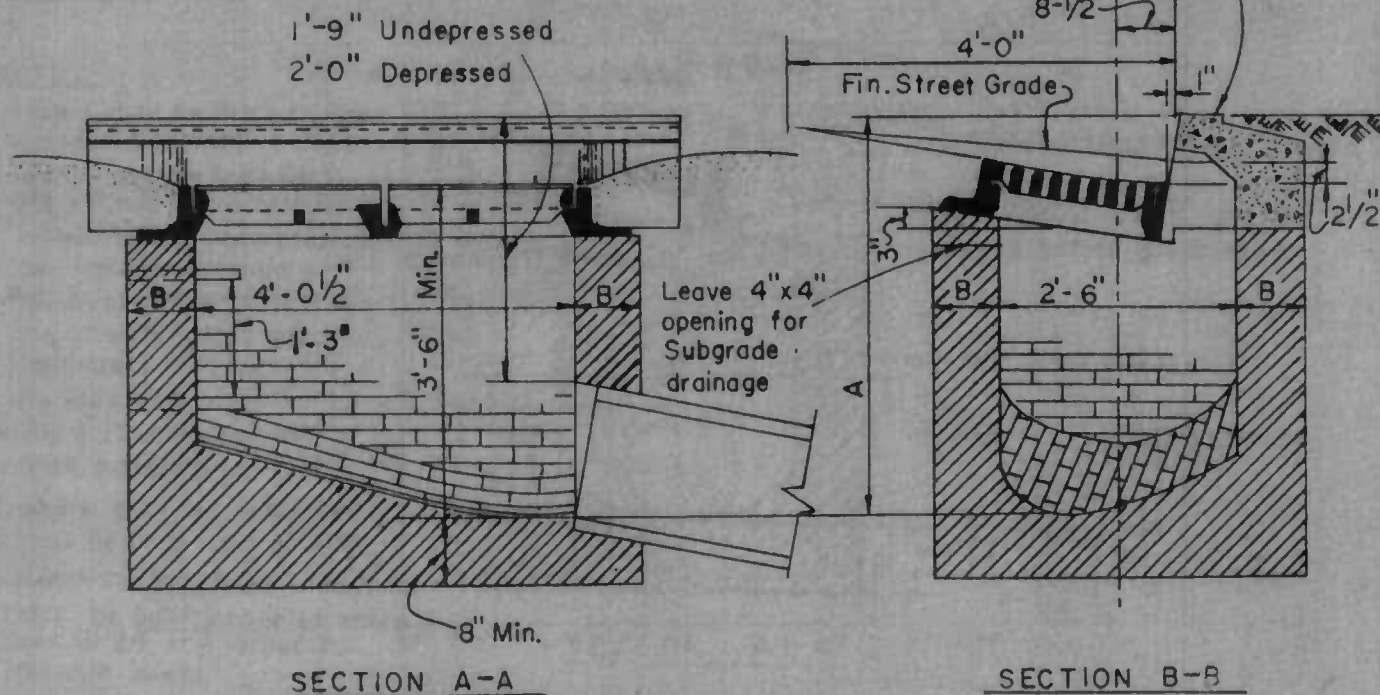
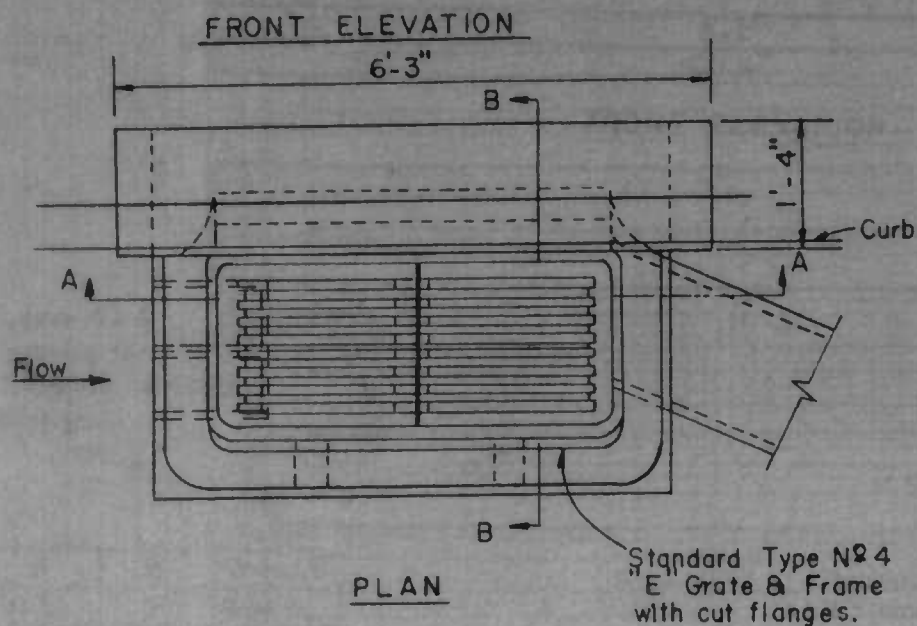
SECTION D-D

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. J. Fargak</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING		"S" GRATE DETAILS
	<i>11-16-66</i> DATE		D-21

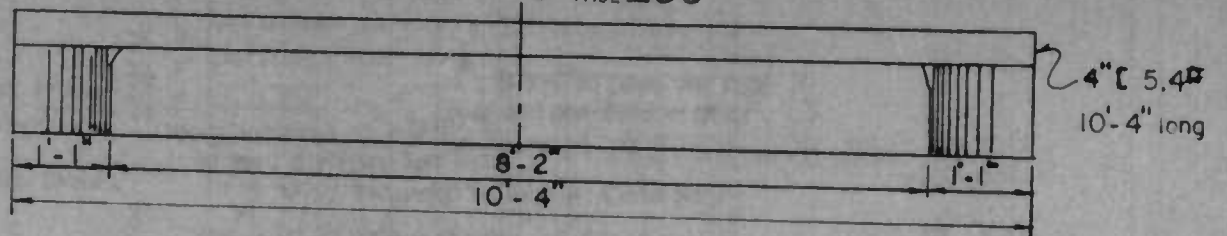
Notes:

1. Slab, Walls and Invert shall be Brick or Class A Concrete. Where brick is used, invert shall be brick laid on edge.
2. $B = 8''$ where A is $7'$ or less, $B = 12''$ where A is $7'$ to $11'$
3. Top $4''$ of walls shall be Brick Masonry.
4. Bench (as per Type A Manhole) shall be built into inlet where drains $24''$ and larger run through inlet.
5. Where A is $3'-6''$ or greater standard manhole steps (Sanitary Sewer Section) shall be installed as shown.



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DATE	BY

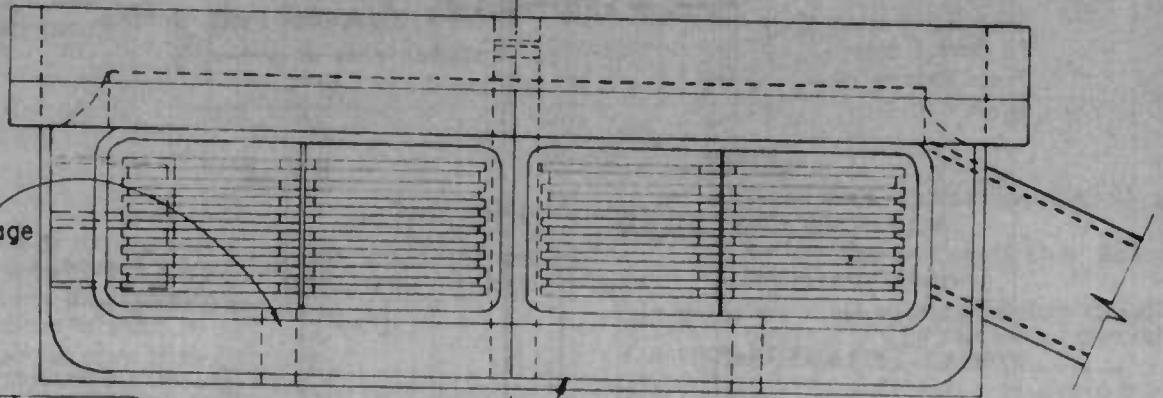
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. J. Dwyer</i>	REVIEWED	STANDARD STORM DRAINAGE DETAILS TYPE "E" COMB. INLET	
	DIRECTOR			
	<i>Harold Hamilton</i>			
	DIVISION OF ENGINEERING			
	DATE <i>11/1/66</i>			D-23



FRONT ELEVATION

Leave 4"x4"
opening for
Subgrade drainage
(Optional)

Flow →



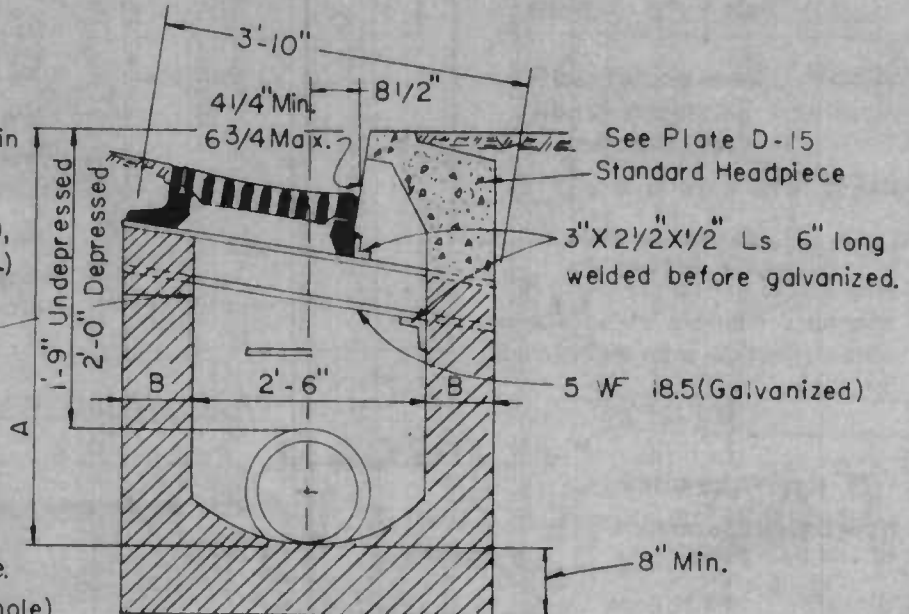
A → Standard Type No 4 "E" Grate
& Frame with cut flanges.

PLAN

A	B	WALLS
< 5'	8"	Br. or Rc.
5' to 9'	12"	Br. or Rc.
5' to 12'	8"	R.C.*

Note:

1. Invert shall be Brick or Plain Class "A" Concrete
2. Walls shall be Brick (Br.), Plain Class "A" Concrete (P.C.), or Reinforced Concrete (R.C.) See Table for dimensions
3. Reinforcing #4 @ 10" o/c E.W. in 1/2 of walls Reinforcing continuous at corners All laps 1'-4"
4. Top 4" of walls shall be brick masonry.
5. Where brick is used, invert shall be brick laid on edge.
6. Bench (as per Type A Manhole) shall be built into inlet where drains 24" and larger run through inlet.
7. Where A is 3'-6" or greater standard manhole steps (Sanitary Sewer Section) shall be installed as shown.



SECTION A-A

REVISED	
DATE	BY

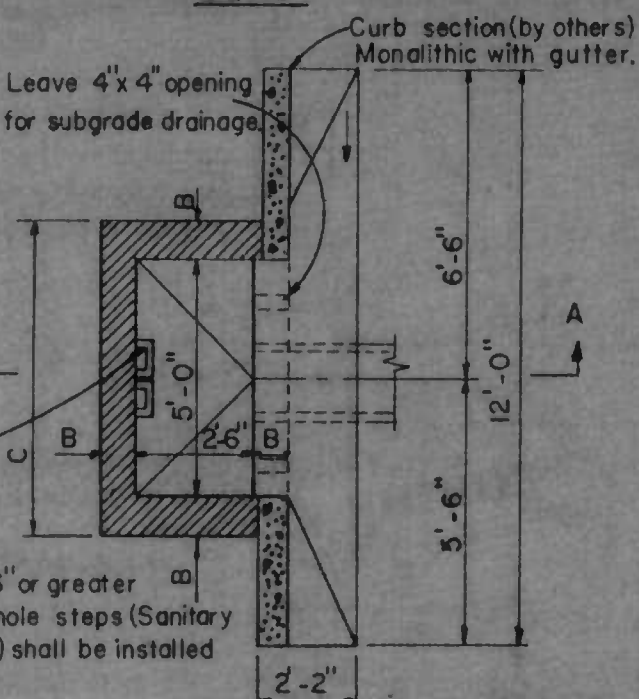
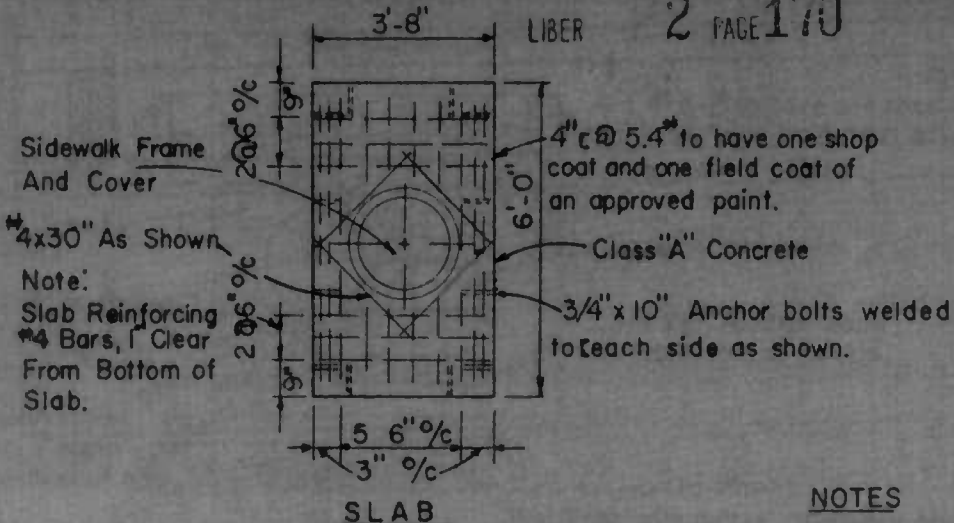
HARFORD
COUNTY
DEPARTMENT
OF
PUBLIC WORKS

APPROVED
D. J. Clary
DIRECTOR
Harold Hamilton
DIVISION OF ENGINEERING
DATE *11/1/66*

REVIEWED

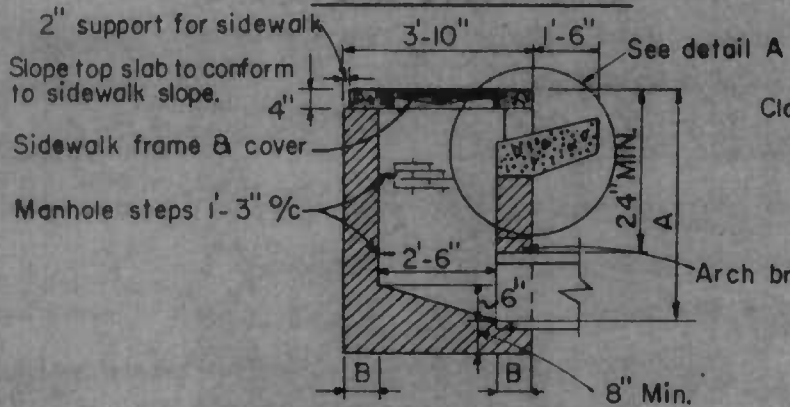
STANDARD STORM DRAINAGE DETAILS
DOUBLE TYPE "E" COMB. INLET

D-24

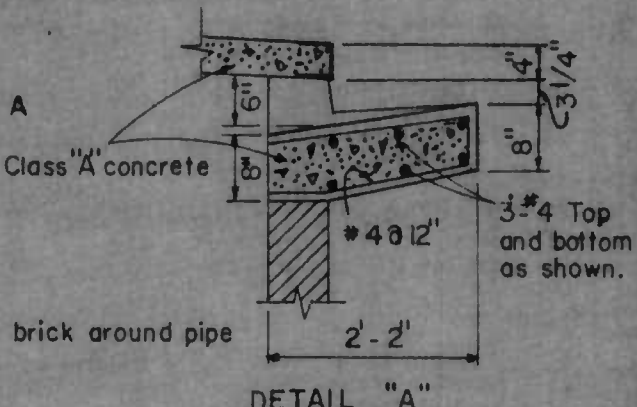


Where A is 3'-6" or greater standard manhole steps (Sanitary Sewer Section) shall be installed as shown.

PLAN BELOW SLAB



SECTION A - A



DETAIL "A"

NOTES

1. Where brick is used invert shall be brick laid on edge.
2. Bottom slab and invert shall be brick or class "A" concrete.
3. Walls shall be brick (BR) plain class "A" concrete (PC) or reinforced concrete (RC.) See Table For Dimensions.

A	B #	C	WALLS
6'	8'	6'-4"	Br. or Rc.
6' to 10'	12"	7'-0"	Br. or Rc.
6' to 15'	8"	6'-4"	Rc.

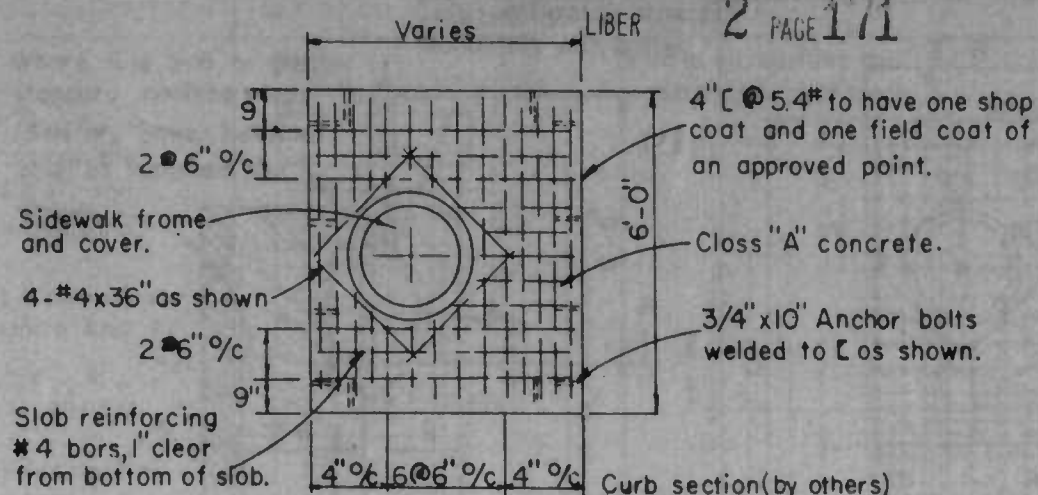
4. * Reinforcing - #4 @ 10" o/c E.W. in $\frac{1}{2}$ of walls, reinforcing continuous at corners. All laps 1'-4".
5. Top 4" of walls shall be brick masonry.

* Wall thickness (B) may be stepped at depths shown.

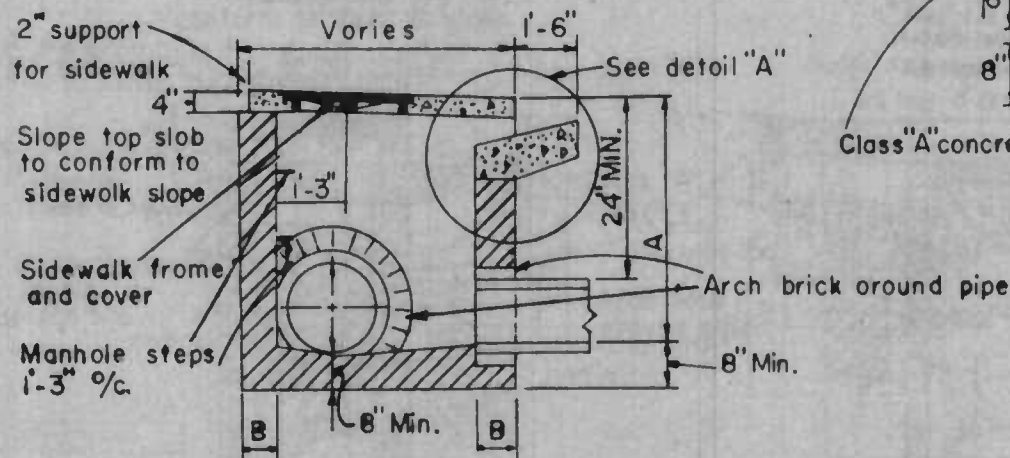
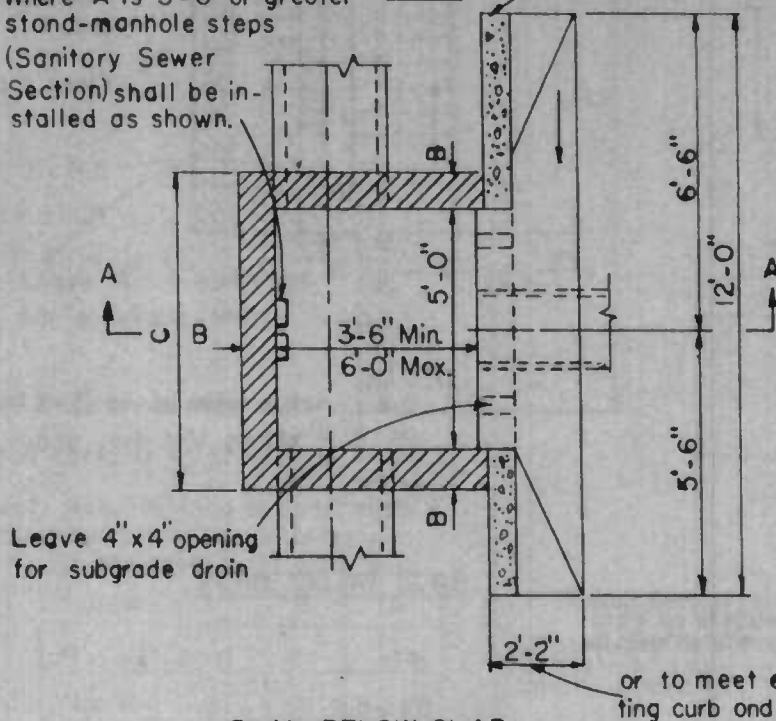
REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>R. J. Dwyer</i> DIRECTOR	REVIEWED 	STANDARD STORM DRAINAGE DETAILS TYPE A-1 INLET
	<i>James J. Blumhals</i> DIVISION OF ENGINEERING		
	DATE 1/1/1966		

D-25



Where A is 3'-6" or greater stand-manhole steps (Sanitary Sewer Section) shall be installed as shown.

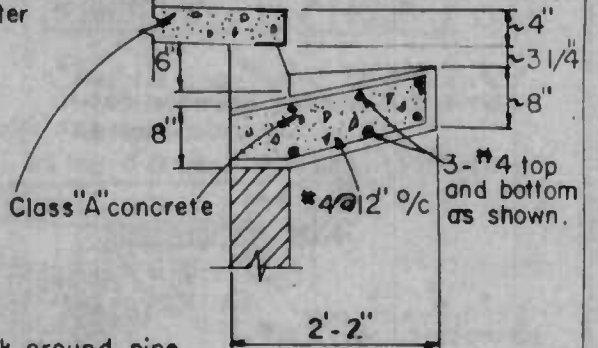


SECTION A-A

- NOTES**
- Where brick is used invert shall be brick laid on edge.
 - Bottom slab and invert shall be brick or class "A" concrete.
 - Walls shall be brick (BR.) plain class "A" concrete (P.C.) or reinforced concrete (R.C.)
 - Reinforcing-4 10" %c E.W. in $\frac{1}{2}$ of walls, reinforcing continuous at corners. All laps 1'-4".
 - Top 4" of walls shall be brick masonry. Additional brick shall be used to bring MH cover to ex.gr. if required.
 - Bench (as per type A manhole) shall be built into inlet where drains 24" and larger run through inlet.
- *Wall thickness may be stepped at depths shown.

A	B*	C	Walls
<6'	8"	6'-4"	Br. or P.C.
6' to 10'	12"	7'-0"	Br. or P.C.
6' to 15'	8'	6'-4"	R.C.*

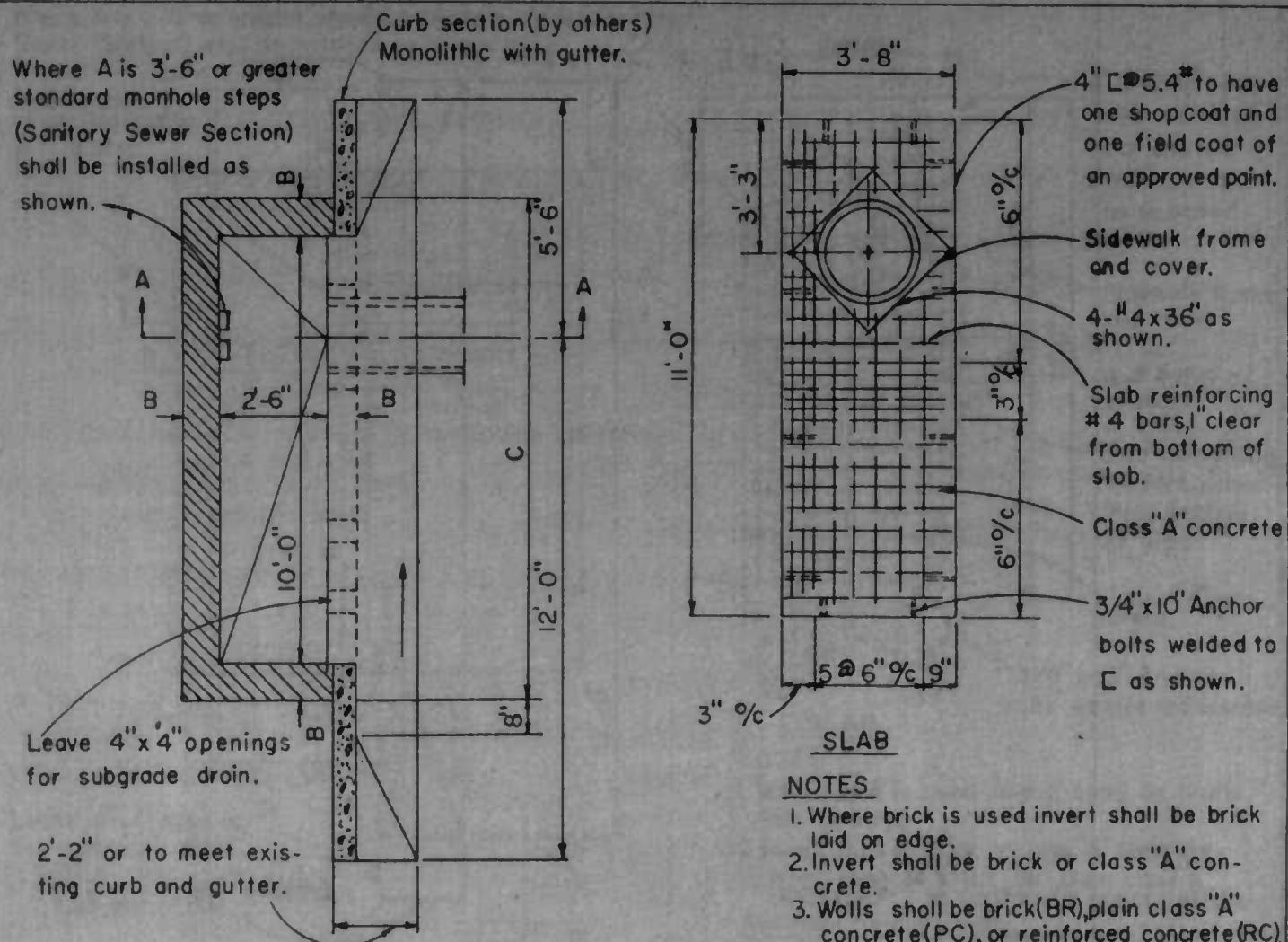
See table for dimensions.



DETAIL "A"

REVISED	
DATE	BY

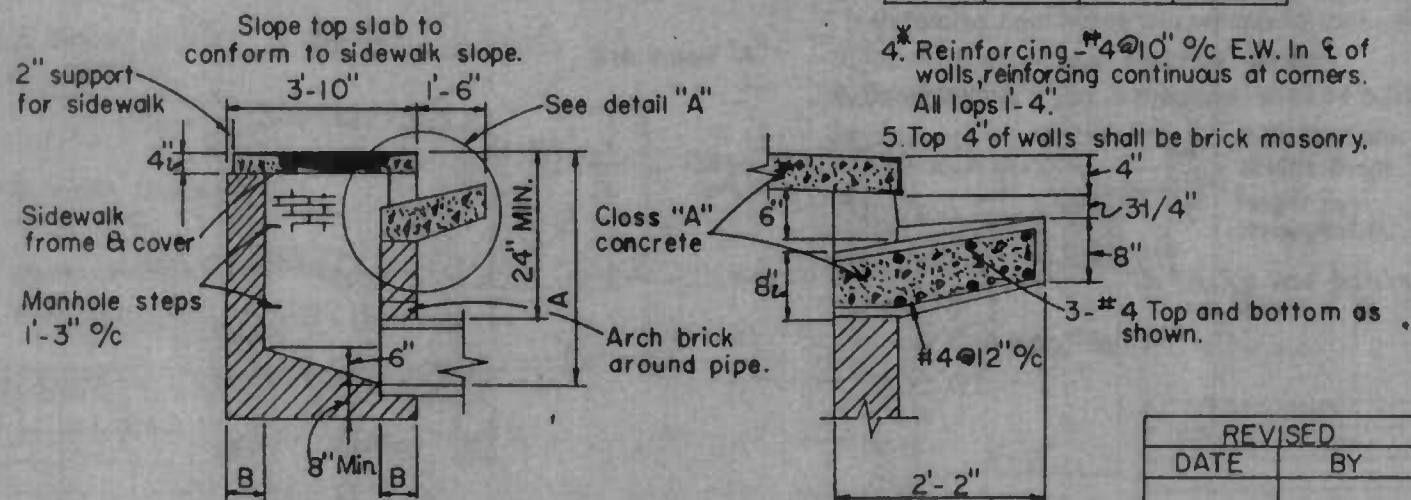
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED	REVIEWED	STANDARD STORM DRAINAGE DETAILS	D-26
	DIRECTOR			
	DIVISION OF ENGINEERING			
	DATE			



NOTES

- Where brick is used invert shall be brick laid on edge.
- Invert shall be brick or class "A" concrete.
- Walls shall be brick (BR), plain class "A" concrete (PC), or reinforced concrete (RC). See table for dimensions.

A	B*	C	Walls
<5	8"	11'-4"	Br. or Pc.
5' to 8'	12"	12'-0"	Br. or Pc.
5' to 10'	8"	11'-4"	R.C.*



SECTION A-A

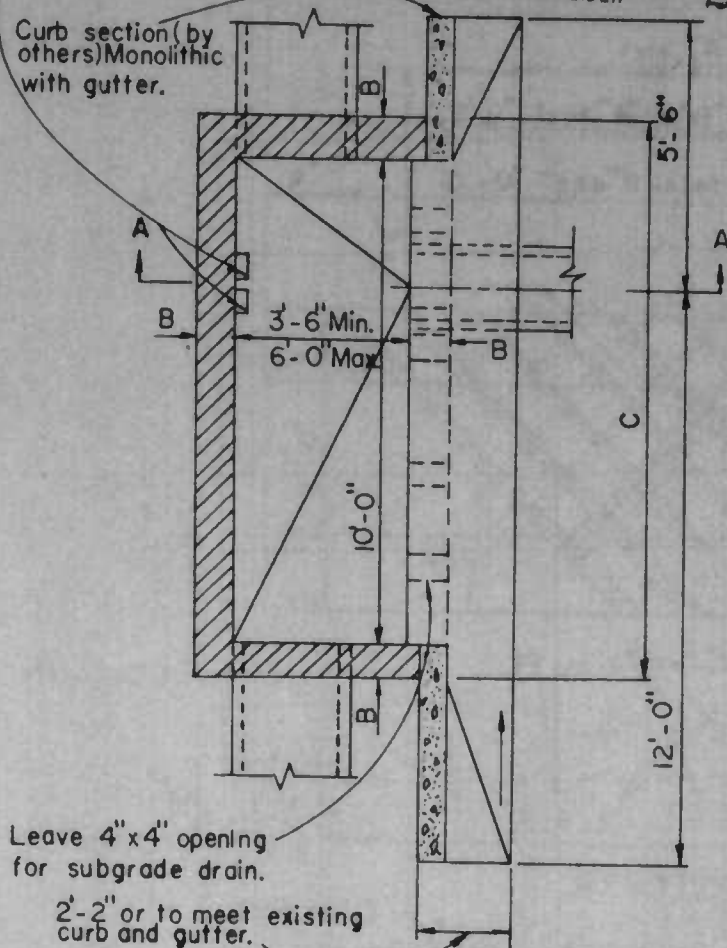
DETAIL "A"

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>P. J. Dwyer</i> DIRECTOR <i>Harold Hamilton</i> DIVISION OF ENGINEERING 11/1/66	REVIEWED	STANDARD STORM DRAINAGE DETAILS TYPE B-1 INLET	D-27

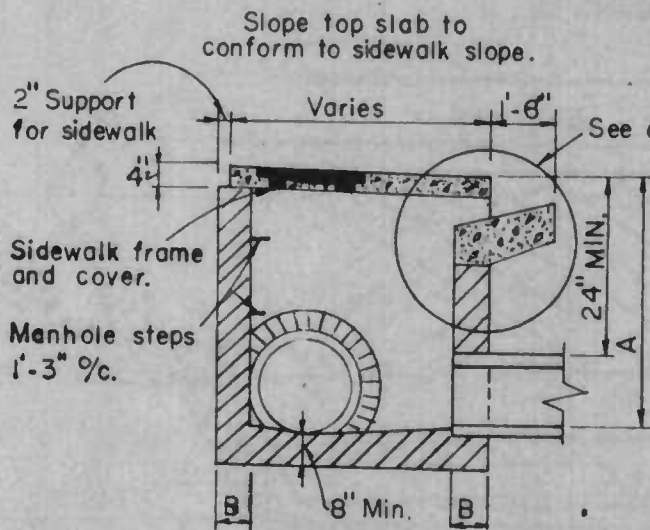
Where A is 3'-6" or greater, standard manhole steps (Sanitary Sewer Section) shall be installed as shown. LIBER 2 PAGE 113

Curb section (by others) Monolithic with gutter.

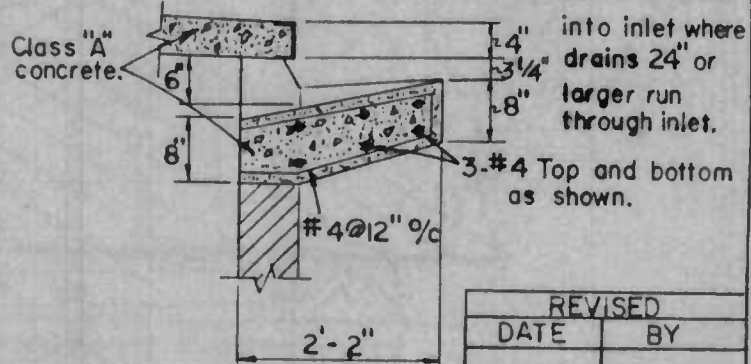


PLAN BELOW SLAB

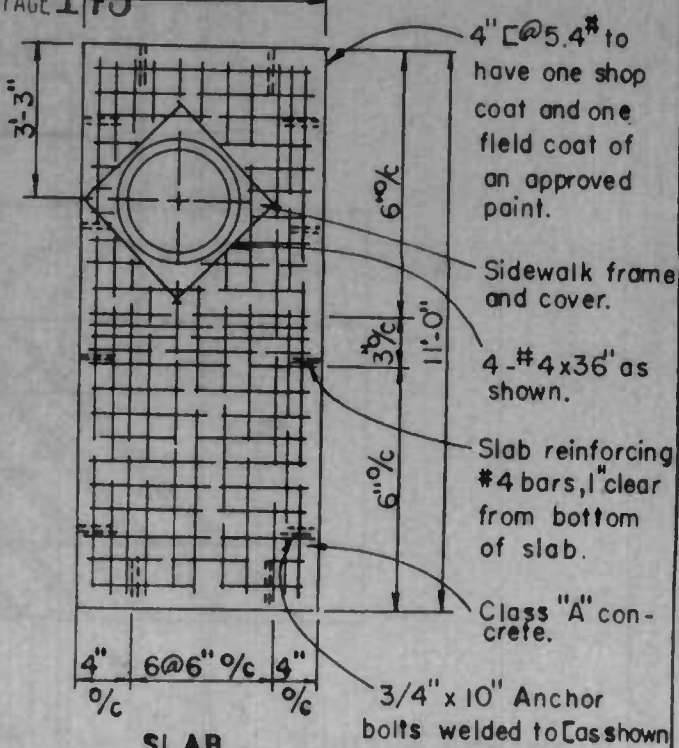
± Wall Thickness may be stepped at depths shown.



SECTION A-A



DETAIL "A"



SLAB

NOTES

1. Where brick is used invert shall be brick laid on edge
2. Invert shall be brick or class "A" concrete.
3. Walls shall be brick (BR), plain class "A" concrete (PC), or reinforced concrete (RC). See table for dimensions.

A	B #	C	Walls
< 5'	8"	11'-4"	Br. or Pc.
5' to 8'	12"	12'-0"	Br. or Pc.
5' to 10'	8"	11'-4"	Rc. *

4. * Reinforcing - #4 @ 10" @ 1/4 E.W. in 1/2 of walls, reinforcing continuous at corners. All laps 1'-4"
5. Top 4" of walls shall be brick masonry
6. Bench (as per Type A manhole) shall be built

REVISED	
DATE	BY

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

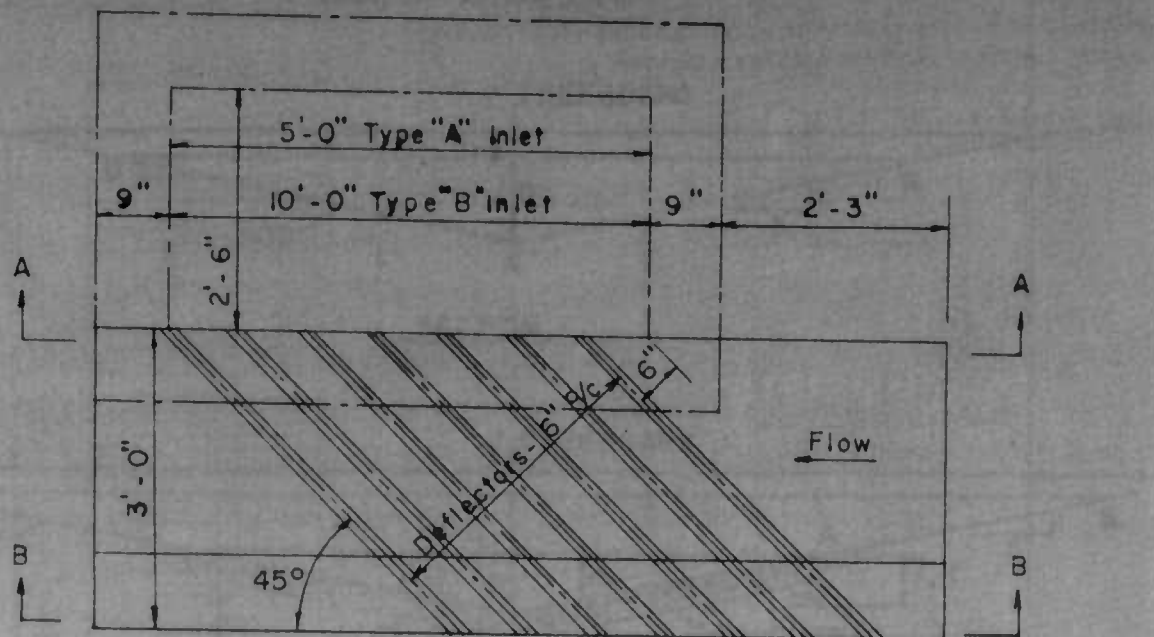
APPROVED
R. J. Lippert
DIRECTOR
Harold L. Smith
DIVISION OF ENGINEERING
DATE 1/1/66

REVIEWED

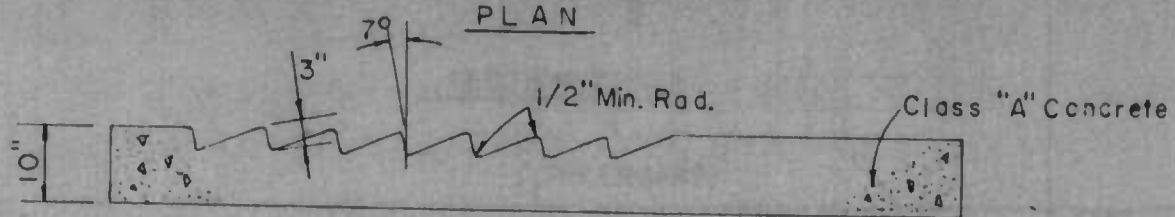
STANDARD STORM DRAINAGE DETAILS

TYPE B-2 INLET

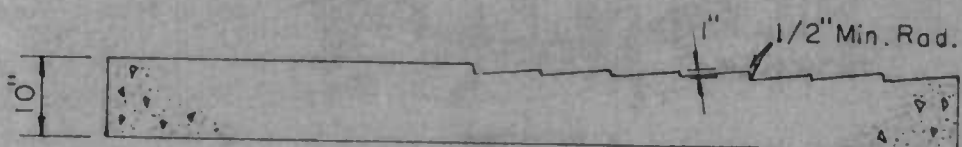
D-28



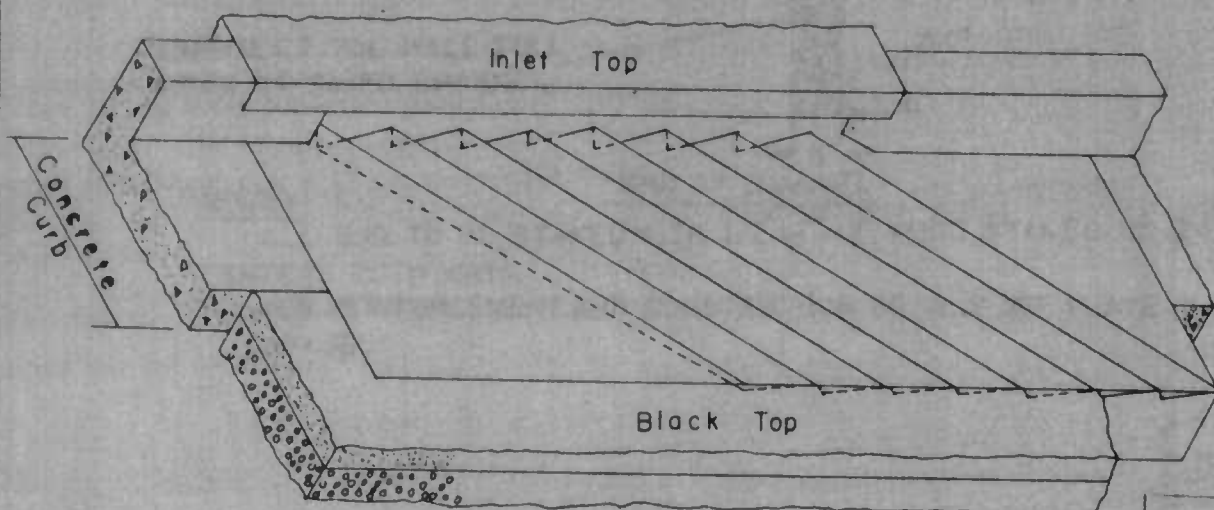
PLAN



SECTION "A-A"



SECTION "B-B"



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REVISED	
DATE	BY

HARFORD
COUNTY
DEPARTMENT
OF
PUBLIC WORKS

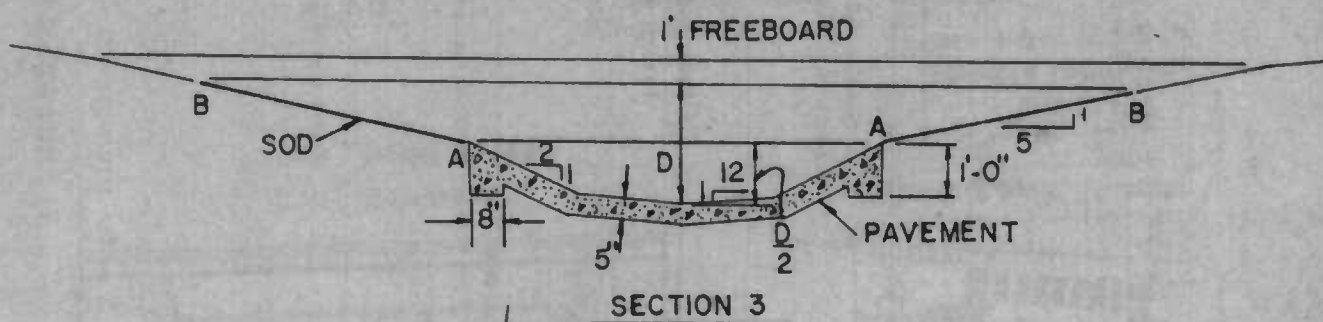
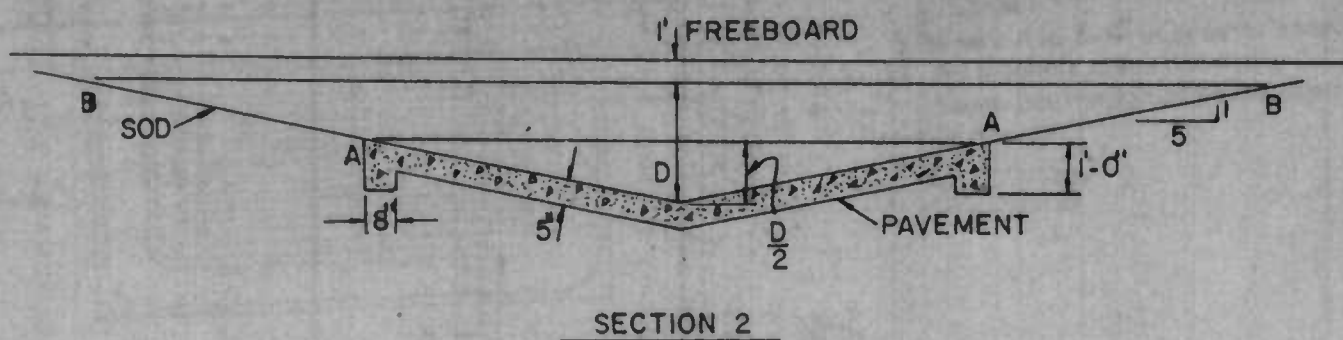
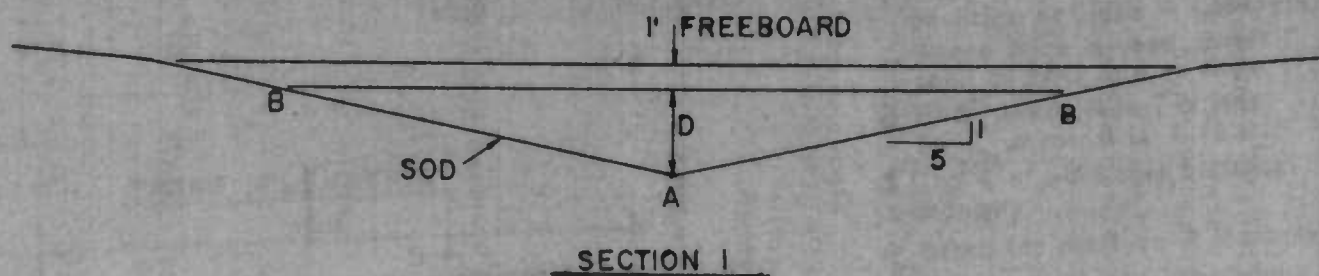
APPROVED
C. G. O'Connell
DIRECTOR
Harold L. Hamilton
DIVISION OF ENGINEERING
4/1/66

REVIEWED

STANDARD STORM DRAINAGE DETAILS

CURB TYPE INLET
WITH DEFLECTORS

D-29



CONSTRUCT TOE WALL FULL
WIDTH OF PAVED CHANNEL

END OF CHANNEL

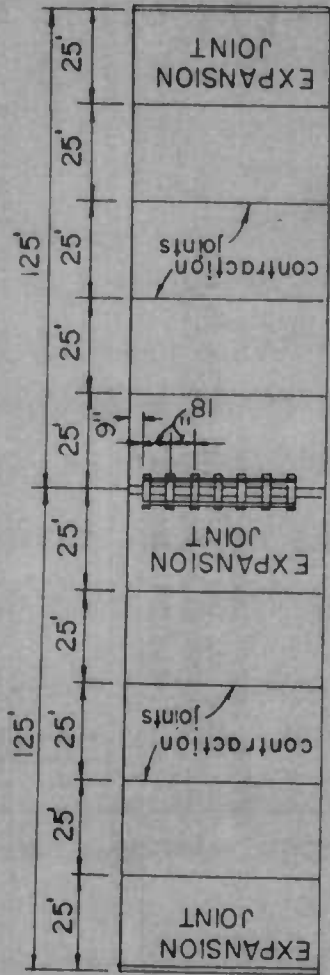
NOTE-

ALL SOD TO BE STAKED WITH 1/2"x1"x12" WOOD STAKES ON 24"
CENTERS BOTH WAYS.
FOR REINFORCEMENT AND CONSTRUCTION DETAILS SEE PLATE D-31
AB = SOD

REVISIONS	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>R. G. Barry</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAILS OPEN CHANNELS	D-30
	<i>Harold Hamilton</i> DIVISION OF ENGINEERING			
	DATE <i>1/1/46</i>			

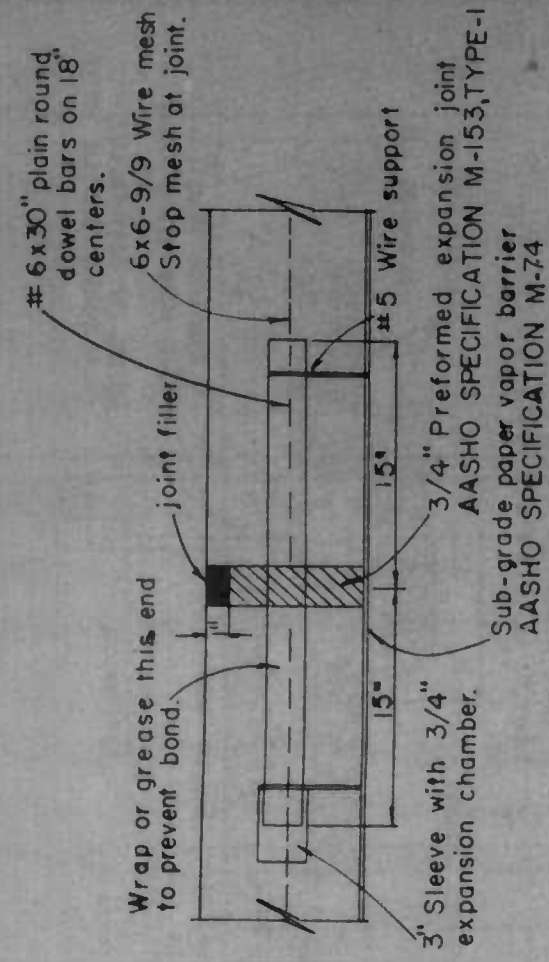
PUBLIC WORKS



PLAN

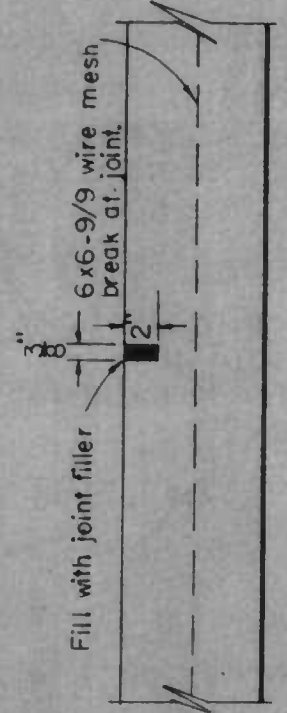
NOTE

1. Weep holes are to be provided where ground conditions and the geometric shape at the channel paving require it.



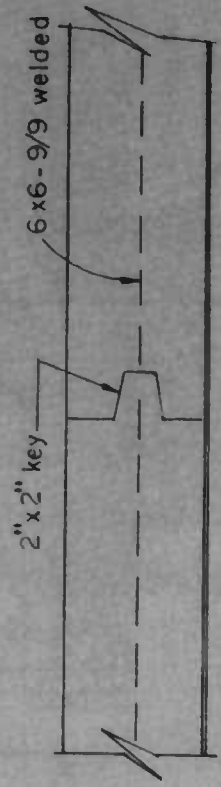
TYPICAL EXPANSION JOINT *

Other types can be used if approved by the B.C.B.E. Maximum spacing of dowel bars shall be 18"



CONTRACTION JOINT *

Lap wire mesh minimum of 6"



CONSTRUCTION JOINT *

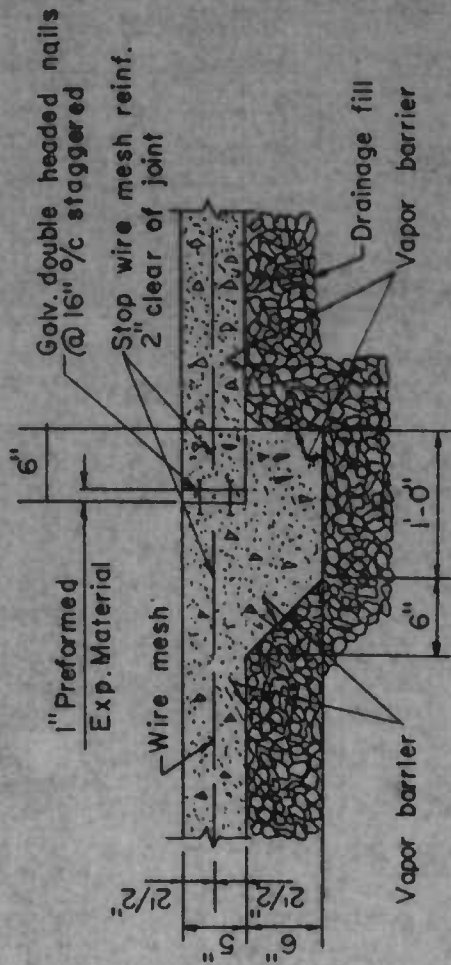
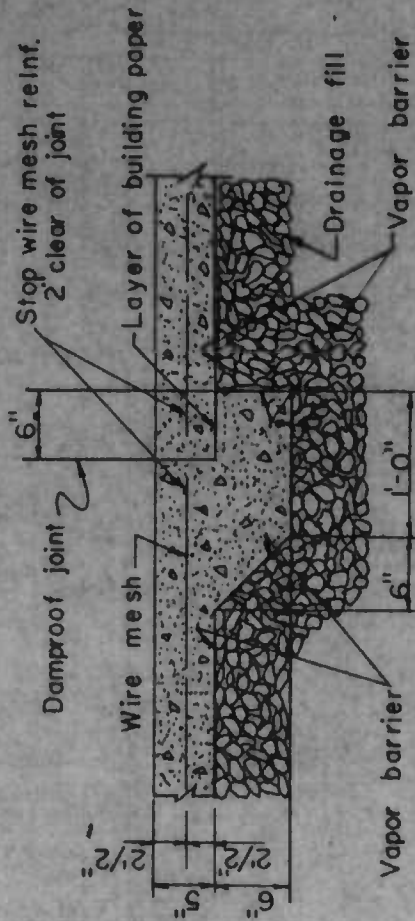
Construction joint should not be placed closer than 10' to any other type joint.

* See drawing D-32 for alternate joint detail.

REVISIONS	DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED	REVIEWED	DATE
	<i>[Signature]</i> DIRECTOR	<i>[Signature]</i> BUREAU OF ENGINEERING	11/1/66

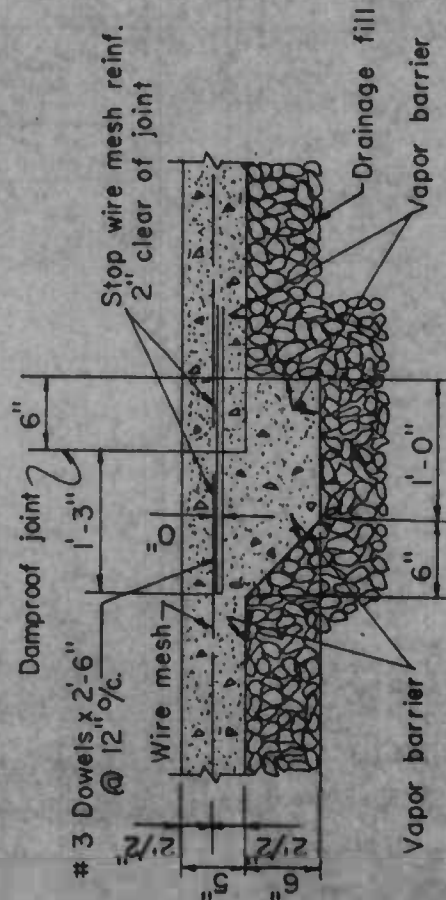
STANDARD STORM DRAINAGE DETAILS
JOINTS FOR CONCRETE CHANNELS

TYPICAL EXPANSION JOINT
FOR CHANNEL SLABTYPICAL CONTRACTION JOINT
FOR CHANNEL SLAB

REVISIONS	DATE	BY

NOTES

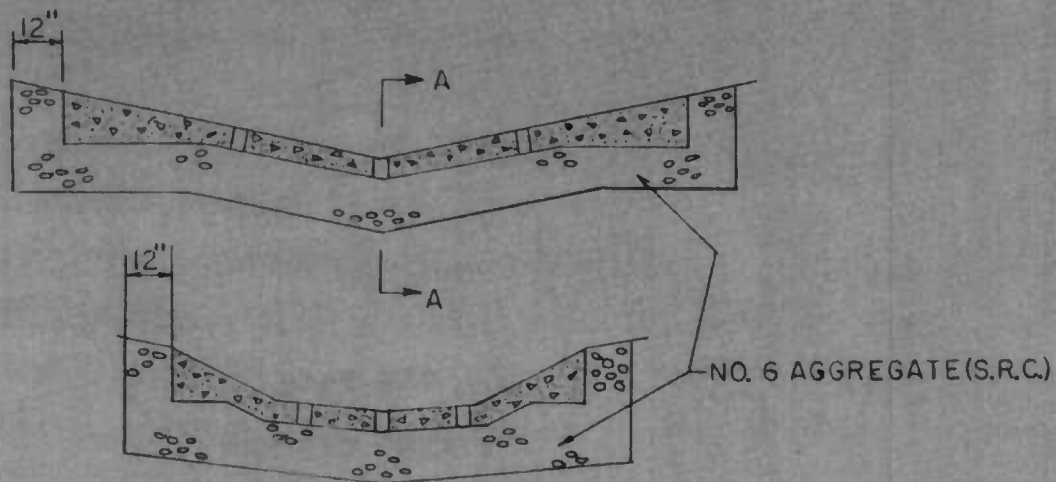
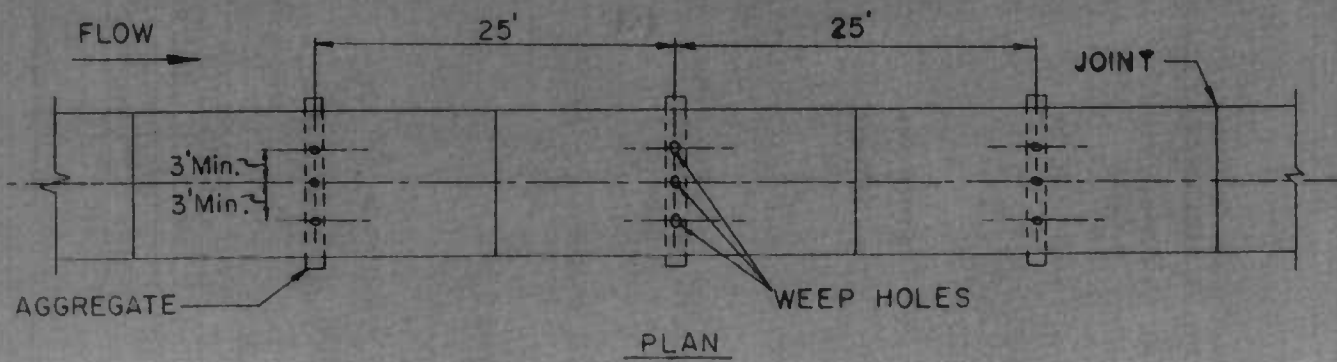
1. Spacing between joints shall be 25 ft.
2. Weep holes are to be provided where ground conditions and the geometric shape of the channel paving require it.

TYPICAL CONSTRUCTION JOINT
FOR CHANNEL SLAB

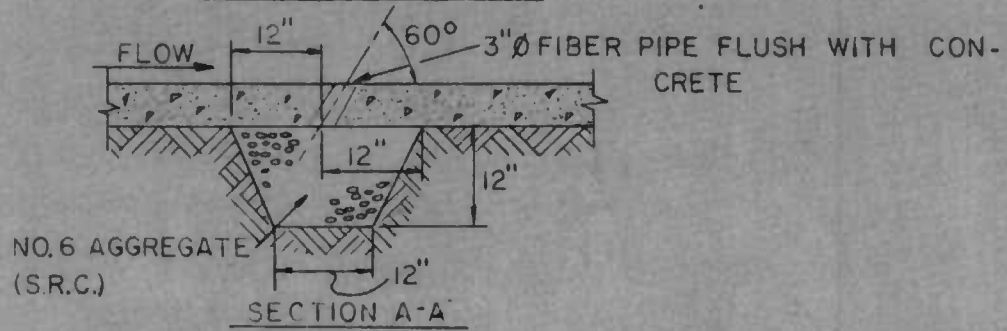
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. J. [Signature]</i> DIRECTOR <i>[Signature]</i> BUREAU OF ENGINEERING DATE 11/1/66
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STANDARD STORM DRAINAGE DETAILS
JOINTS FOR CONCRETE CHANNELS

D-32



PAVEMENT SECTIONS



REVISIONS	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>R. J. Woznyk</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DETAIL WEEP HOLES FOR CONCRETE CHANNELS	D-33
	BUREAU OF ENGINEERING			
	DATE			

PART III
HARFORD COUNTY
ROAD AND STREET DESIGN STANDARDS

ROAD AND STREET DESIGN STANDARDS

	Page
I GENERAL.....	1-2
A. Definitions.....	1-2
B. Responsibility for Design and Construction..	2
C. Authorization of Permits.....	2
II DESIGN.....	2-11
A. Preliminary Considerations.....	2
B. Layout of Intersections.....	2
C. Horizontal Curves.....	2-3
D. Superelevation and Warping.....	3-5
E. Widening.....	5
F. Cul-de-Sacs, Tee-Turn-Arounds, Alley Entrances, Driveways.....	5
G. Traffic Way Pavement Criteria.....	6
H. Layout of Curbs, Pavement Edges, and Property Lines at Intersections.....	6-7
I. Grades.....	7-8
1. Traffic Ways.....	7
2. Intersections with State Roads.....	7-8
3. Gutters and Ditches.....	8
J. Vertical Curves.....	9
K. Top Curb Grade at Tee Intersections.....	9-10
L. Underdrains.....	10
M. Guard Fence.....	10
N. Sidewalks.....	10
O. Cross Sections and Quantities.....	10
P. Valley Gutters.....	10-11
III CONTRACT DRAWINGS AND DOCUMENTS TO BE SUBMITTED TO HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS.....	11-16
A. Preliminary Reports.....	11
B. Contract Drawings.....	11-16
C. Contract Specifications.....	16
D. Estimate of Quantities.....	16
E. Design Calculations.....	16
IV DESIGN FIGURES	
1. Sample Drawing	
R-A Check List	
R-B Geometrics and Road Construction	
R-C Stopping Sight Distance Chart for Determination of Minimum Length of Over-Vertical Curves.	
R-D Stopping Sight Distance Chart for Determination of Minimum Length of Under Vertical Curves.	
R-E Passing Sight Distance Chart for Determination of Minimum Length of Over-Vertical Curves	
R-F Widening Computation	
R-G Elevation of Top Curb P.I. Four Corner Intersection.	

Section I

HARFORD COUNTY

DEPARTMENT OF PUBLIC WORKS

ROAD AND STREET DESIGN STANDARDS

I. GENERAL

A. Definitions

In these Standards, the term "traffic way" identifies any highway, thoroughfare, road, street, cul-de-sac, or alley under the jurisdiction of Harford County. Thoroughfares and intercounty roads are traffic ways with large daily rates of vehicular traffic serving as major arterial routes for movement of through traffic.

An Alley is an established passageway for vehicles and pedestrians affording a secondary means of access in the rear to properties abutting on a street or highway.

A Cul-de-Sac Street is a lone street open at one end only and with special provision for turning around.

Secondary Streets are those used primarily for access to abutting properties.

Primary Streets are streets which serve to carry traffic to or from several primary or secondary streets and connects them to other Collector Streets or to arterial highways and usually serves the primary function of providing access to abutting properties.

Minimum Stopping Sight Distance, by A.A.S.H.O. definition, is the sum of two distances: (1) the distance the vehicle travels from the instant the driver sights an object necessitating a stop, to the instant the brakes are applied, plus (2) the distance required to stop the vehicle after the brakes have been applied. The Stopping Sight Distance Chart (Design Figures) is based on the longest distance at which a driver, whose eyes are 3.75' above the pavement, can see the top of an object 6" high on the traffic way along an over-vertical (crest) curve.

Minimum Passing Sight Distance, by A.A.S.H.O. definition, is the sum of four distances: (1) the distance traveled during the preliminary delay period, (2) the distance the passing vehicle occupies in the left lane, (3) the distance between the passing vehicle at the end of its maneuver and an opposing vehicle, and (4) the distance traveled by the opposing vehicle for 2/3 of the time the passing vehicle is in the left lane. The Passing Sight Distance Chart is based on the longest distance at which a driver whose eyes are 3.75 feet above the pavement can see the top of an object 4'6" high on the traffic way along an over-vertical curve.

Minimum Headlight Sight Distance conforms with the minimum stopping distance definition. The Headlight Sight

Distance Chart is based on the length of roadway along an under-vertical (sag) curve illuminated by headlights 2'-6" above the traffic way with a 1-degree upward divergence of the light beam from the vehicle's longitudinal axis.

B. Responsibility for Design and Construction

Harford County traffic ways in new developments are designed by consulting Engineers. County projects are designed by either the Harford County Department of Public Works or their consulting engineers.

Construction of traffic ways in new developments is done by a contractor; county projects are constructed by either a contractor or the Harford County Department of Public Works.

C. Authorization of Permits

Where intersections occur with traffic ways under the jurisdiction of the Maryland State Roads Commission, or incorporated towns, a permit from the office involved authorizing the proposed construction must be obtained.

II. DESIGN

A. Preliminary Considerations

The design of traffic ways includes general layout, alignment, grades, grading, paving widths, paving material, and drainage facilities. When determining alignments and grades of traffic ways, the designer must consider the requirements for utilities, including adequate storm drainage, and he must take into account any unusual aspects of the design such as railroad crossings, etc.

Design speeds and required sight distances are shown in Table R-B. The designer shall use it for layout, horizontal alignment and grade establishment.

B. Layout of Intersections

Centerlines of traffic ways shall continue through intersections without offsets, and shall intersect as nearly as possible at right angles. Where various conditions make a right angle intersection impracticable, the minimum deflection angle between the centerline of a secondary street and the centerline of any other street shall be 70°, and the minimum deflection angle between the centerline of a primary street and the centerline of another primary street or thoroughfare shall be 80°.

Secondary and primary streets may intersect State Roads at a minimum deflection angle of 80°, but the intersection layout shall be subject to final approval by the State Roads Commission.

Intersections shall be no less than 125' apart between traffic way centerlines.

County traffic ways shall not intersect State Roads at intervals less than 750' between centerlines.

C. Horizontal Curves

Where traffic way centerlines change direction by more than 10' (ten minutes), they shall be connected by a

horizontal curve with a radius to insure a minimum horizontal sight distance as shown in Table I. Minimum radii or horizontal curves shall be limited as directed by the table's minimum radius column, based on PRA criteria. The minimum length of a horizontal curve shall be 100'.

Property lines which change direction through angles less than 1° (one degree) need not have a horizontal curve introduced at the break, unless otherwise directed by the Engineer.

On secondary streets where the centerline deflection angle is greater than 40° and less than 60°, the designer may deviate from the 30 m.p.h. design speed horizontal curvature criteria and use a 200' minimum radius to connect the centerlines.

On secondary streets where the centerline deflection angle is 60° or greater, the designer may deviate from the 30 m.p.h. design speed horizontal curvature criteria and use a 100' minimum, 125' desirable radius to connect the centerlines.

Horizontal curve data shall be computed by the arc definition of a circular curve. A tangent of at least 100' shall be used between reverse curves except in unusual situations on minor streets. Where horizontal curves are not superelevated or warped, horizontal alignments using compound curves shall be avoided. Where horizontal curves are superelevated, horizontal alignments using circular compound curves or spirals may be used as a means of transition into and from the superelevation.

TABLE I

Design Speed m.p.h.	Horizontal Stopping Sight Distance	Horizontal Passing* Sight Distance	Minimum Radius
30 (not superelevated)	200'	--	380'
40 (not superelevated)	275'	--	670'
50 (superelevated)	350'	1600' Desirable 1400' Absolute	700'

* The design engineer shall attempt to provide passing sight distance at least once in every mile of length for thoroughfares through undeveloped areas.

D. Superelevation and Warping

Horizontal curves of traffic ways in subdivisions, commercial and industrial areas shall normally not be superelevated or warped except in the following cases:

Where the radius of a horizontal curve is 200' or less, the outside edge of pavement shall be raised above the grade of the inside edge of pavement. On curbed traffic ways, this warping shall be accomplished by cutting back the normal crown slope to form a crown 8' from the outside edge of pavement. The maximum allowable warp shall be such that the slope from the shifted crown to the inside edge of pavement shall not exceed 1/2" per foot.

On non-curbed traffic ways, the normal crown slope rate shall be carried straight across the entire traffic way from the low to the high edge of pavement. From the high edge of pavement, the shoulder on a warped non-curbed traffic way will continue at $3/8"$ per foot for half its width, then down at the normal shoulder slope to conform with the normal drainage cross section.

Transitions to and from this warping shall be at the design engineer's discretion to provide smooth approach and departure, and suitable drainage.

Along horizontal curves, the outside top curb grade or grade along the outside edge of pavement shall not be less than 0.50%; therefore, centerline grades must exceed 0.50% in order that the warping can be accomplished without decreasing the grade along the outside edge of the traffic way below 0.50%.

Where a traffic way horizontal curve or tangent is designed along a side slope that has a grade of 15% or more across the proposed traffic way alignment, the paving section may be warped in a manner similar to that outlined in the preceding paragraphs. Warping will not be permitted where it would result in the inside edge of a horizontal curve being higher than the outside edge.

Thoroughfares (rural) and Intercounty Roads through undeveloped areas shall be superelevated in accordance with Table 2 based on the design speed of 50 m.p.h. This table is adapted from A.A.S.H.O. and PRA criteria.

TABLE 2

Radius of Curve	Length of Transition	Superelevation (per foot of width)
5730'-2861'	150'	.02'
2860'-1911'	150'	.03'
1910'-1431'	150'	.05'
1430'-1151'	150'	.06'
1150'-961'	150'	.08'
960'-700'	201'	.08'

Neither a superelevation rate greater than .08' per foot of paving width, nor a curve radius less than 700' shall be used in the design of thoroughfares (rural).

To superelevate, pavements shall be rotated around the centerline, except where such procedure would adversely affect adequate drainage design. To avoid such a situation the design engineer may rotate the superelevation around the inside or outside edge of pavement, whichever affords the best drainage design.

For superelevation around the centerline, the centerline grade is held, the outside edge of pavement is raised half the total superelevation, and the inner edge is lowered that same distance. Whenever possible, two thirds of the transition shall be accomplished on tangent, and the remain-

ing third shall be accomplished on the curve.

E. Widening

Horizontal curves with radii of 500' or less need not be widened on the inside edge of pavement. Table and method shown on the Standard Design Figure for widening computation need not apply.

F. Cul-de-Sacs; Tee Turn-Arounds; Alley Entrances; Driveways

1. Cul-de-Sacs - Permanent dead-end streets with a circular turn-around at the closed end shall be no longer than 600'. The radius of the paved circular portion shall be 40' with a right-of-way radius of 50'. This 40' paving radius and 50' right-of-way radius shall apply to all cul-de-sacs without curb and gutter.

In developments involving group houses, the design engineer shall give special consideration to parking requirements. When a circular turn-around is used, with curb and gutter, the paving radius shall be 45', and the right-of-way radius shall be 50'. If the design engineer considers a circular turn-around inadequate for parking conditions, he may elect to design a special rectangular parking area. For criteria regarding special parking areas, the design engineer shall contact the Harford County Planning and Zoning Commission.

The design engineer shall be guided by the effects of allowable grade criteria upon cul-de-sacs location and alignment, and shall avoid excessive use of cul-de-sacs in any one area, particularly in flat terrain.

Approach radii on cul-de-sacs shall be 20' minimum.

2. Tee Turn-Arounds - If a street designed as a temporarily dead end street is to be extended into a through street at a future date, the tee-turn-around shall be used in place of a cul-de-sac. The length of the turnaround, of a "T" portion, shall equal the width of the right-of-way. Where the distance between the property line and the edge of the pavement permits a return radius of 20' shall be used. See Tee-Turn-Around, Standard Details.

3. Alley Entrances - The layout of alley entrances and the top grade of returns shall conform with the Alley Entrance, Standard Details.

4. Driveways - Driveway entrances shall not be shown on the traffic way plans except in special cases, but shall be provided by the field engineer for all detached houses. When driveways are shown on the traffic way plans, layout shall conform with the applicable Typical Driveway Entrance Detail, Standard Detail.

G. Traffic Way Pavement Criteria

Pavement types shall be as shown in the Road Code.

If a subdivision abuts on a street that is partially or completely involved in the subdivision construction and a public transportation route for free-wheeling vehicles is in operation, or planned to be in operation on that street, then a stopping lane 10' wide by 30' long with a 70' transition to the existing pavement edge shall be provided for on the near side of intersections, or where specified by the Office of Planning. Sufficient right-of-way shall be set aside in the vicinity of the stopping lanes so that at the completion of construction, the right-of-way line shall be at least 12' beyond the edge of pavement. Sidewalks adjacent to stopping lanes shall be at least 5' in width.

In commercial areas where no off-street parking is involved or where on-street parking is permitted at any time, an extra 8' lane shall be provided for parking. Sufficient right-of-way shall be set aside in the vicinity of parking lanes so that at the completion of construction, the right-of-way line shall be at least 12' beyond the edge of pavement. Where a traffic way with such an extra 8' lane intersects another traffic way, the 8' parking lane shall be discontinued at least opposite the property line of the cross street. Thus, pedestrians traversing the traffic way from the cross street sidewalk will not be forced to cross the extra lane.

H. Layout of Curbs, Pavement Edges and Property Lines at Intersections

The radii of traffic curbs and pavement edges at intersections shall be governed by the following criteria:

At an intersection of secondary streets, or of a minor street with a collector street, the radius of the returns shall be 20' to face of curb, or 25' to edge of pavement where no curbs exist.

At an intersection of collector streets, or of a collector street with a thoroughfare, the radius of the returns shall be 20' to face of curb, and 20' to edge of pavement where no curbs exist.

At an intersection of an alley and a street, the standard radius of the return shall be 10' to face of curb. Where the distance on the street between the face of curb and property line is less than 10', that distance shall become the return radius.

At an intersection of alleys, the fillets shall be formed with 10' chords, subject to the approval of the Engineer.

The cut-back of property lines at intersections shall be governed by the following criteria:

At an intersection of traffic ways (other than alleys), the cutback of the property line normally shall be a chord connecting the points on the property lines directly opposite the P.C. and P.T. of the curb return or edge of pavement return. In any case, the minimum distance from the property line

P.I. at an intersection and the property line chord points shall be a minimum of 10'.

At an intersection of an alley and a street, the property line shall not be cut-back.

At an intersection of alleys, the property line shall conform with the pavement fillet.

I. Grades

1. Traffic Ways - The minimum allowable grade of traffic ways shall be 0.50% except for Special traffic ways where minima shall be established by the Harford County Department of Public Works for individual cases.

The maximum grades of traffic ways shall be as shown in the Summary Chart, Design Figures.

To meet the criteria for cul-de-sacs, grades across the circular portions of cul-de-sacs shall be flattened when necessary: the grade along the centerline extended across the circular portion of any cul-de-sac shall not exceed a mean of 6%.

At an intersection of two traffic ways, the normal typical section of the priority traffic way shall continue through the intersection without break. The crown of the other traffic way shall be warped from its normal section to connect to the edge of the priority traffic way. Where two traffic ways of equal importance intersect, one shall be considered as a priority traffic way in order to accomplish the foregoing connection, except where the design engineer is unable to determine satisfactorily either one of the intersecting traffic ways as a priority traffic way. In this case, the four corner intersection connection may be used, as shown in the Elevation of Top Curb P.I. Four Corner Intersection Design Figure. When the grade of a non-priority traffic way (other than a minor street) exceeds 6% at an intersection, that grade shall be broken at least 50' in advance of the station opposite the near property line of the priority traffic way. The grade into and out of the intersection shall then be flattened to 6% or less. The original grade of the non-priority traffic way may be resumed at least 50' past the station opposite the far property line of the priority traffic way. A 100' minimum vertical curve shall join the tangents at both P.I.s.

Grades of minor streets up to and including 8% may continue into and out of intersections without flattening. Where a minor street grade exceeds 8%, that grade shall be broken and flattened to 8% or less to and from the intersection as outlined in the previous paragraph.

Approaches to tee intersections shall be as outlined in Section L., except that tee intersections with state roads shall be outlined in the following section.

2. Intersections with State Roads - Approach grades to Maryland State Roads Commission highways shall be governed by the control points set forth in the following Table 3 and Table 4 derived from State Roads Commission

intersection limits. The designer shall lay out the most efficient approach profile obtainable and conform to stopping sight distance and headlight sight distance requirements. In addition, the profile of an ascending approach to a state highway shall not fall below the applicable control point, nor shall the profile of a descending approach to a state highway fall above the applicable control point:

TABLE 3
Boulevard Type State Highways (Stop Intersections)

Minor Street Control Points			Collector Street and Thoroughfare Control Points	
Slope of Natural	Dist. From Ult. Edge of St. Hwy.	Dist. Above or Below Ult. Edge of State Hwy.	Dist. From Ult. Edge of State Hwy.	Dist. Above or Below Ult. Edge of State Hwy.
0%-4%	300'	6'	350'	7'
4%-8%	200'	4'	250'	5'
Over 8%	125'	3.75'	175'	5.25'

TABLE 4
Non-Boulevard Type State Highways (Caution Intersections)

Minor Street Control Points			Collector Street and Thoroughfare Control Points	
Slope of Natural	Dist. From Ult. Edge of State Hwy.	Dist. Above or Below Ult. Edge of State Hwy.	Dist. from Ult. Edge of State Hwy.	Dist. Above or Below Ult. Edge of State Hwy.
0%-4%	250'	5'	300'	6'
4%-8%	175'	5.25'	200'	4'
Over 8%				
1st	50'	1.50'	125'	3.75'
2nd	100'/150'	7.50'/10.50'		

3. Gutters and Ditches - The minimum and maximum grades for gutters and ditches shall be governed by the following table:

Type of Facility	Minimum Grade	Maximum Grade
Standard Combination Curb and Gutter	0.50%	Conform to Street Grade
Type 1 Bit. Con. Curb*	0.50%	Conform to Street Grade
Sodded Swale	0.50%	4%
Seeded and Fertilized Ditch	0.50%	2%
Sodded Ditch	0.50%	4%
Concrete Paved Ditch	0.50%	Conform to Thoroughfare grade

*To be used where grades exceed 4% or flow exceeds 3 cfs.

J. Vertical Curves.

To avoid an abrupt change in vertical alignment when passing from one grade to another, a vertical curve shall be used at the grade intersection whenever the algebraic difference in the percents of grade is 0.25 or greater. Elevations on vertical curves may be scaled or preferably computed, and when computed shall be derived by parabolic curve formulas.

The minimum length of a vertical curve may include a compound curve, but not a reverse curve, and shall not be less than 100'.

On under-verticals (sags), the minimum vertical curve length is generally determined by the topography, but the curve should not be designed so sharp that it critically reduces the traffic way length illuminated by automobile headlight. The design of under-verticals shall be governed by the criteria set forth in the Headlight Sight Distance Chart. The design engineer shall note that limits indicated on this chart have been determined as the maximum and minimum curve lengths (allowing for adequate drainage) on vertical curves having a change in sign of tangent grade.

On over-verticals (crests), the minimum vertical curve length is determined by the required sight distance as discussed under Sight Distance. After determining the type of sight distance required, the design engineer shall be governed by the criteria set forth in the Stopping Sight Distance Chart or the Passing Sight Distance Chart, whichever applies. The limits indicated on these charts have been determined as the maximum and minimum curve lengths (allowing for adequate drainage) on vertical curves having a change in sign of tangent grade. The limits do not apply on vertical curves where there is not a change in sign of tangent grade.

An effort shall be made to avoid the placing of horizontal curves along over-vertical curves. Where such design is unavoidable, the sight distance of the vertical curve shall not be less than the horizontal curve sight distance, and the limits of the horizontal curve shall extend beyond the limits of the vertical curve.

K. Top Curb Grade at Tee Intersections

To facilitate smooth curb rollouts at tee intersections, the tangent top curb grade of the side trafficway shall be pulled into the low curb P.I. of the through traffic way when the side traffic way is on a descending grade into the intersection. When the side traffic way is on an ascending grade into the intersection, the tangent top curb grade of the side traffic way shall be pulled into the high curb P.I. of the through traffic way. The remaining curb of the side traffic way shall be rolled with a vertical curve to meet the remaining curb P.I. of the through traffic way.

When obtainable, the minimum length of a rolled curb shall be 100', but the design engineer shall avoid inadequate drainage situations.

The maximum grade into a tee intersection shall be

6%, except for minor streets which may connect to through traffic ways at 8%.

In extreme cases, where the tee street is on a steep grade and distance for flattening as described under Grades is severely limited, the design engineer may elect to warp both top curb grades into the intersection.

L. Underdrains

To drain free water from subgrades, underdrains shall be incorporated into the design of traffic ways wherever there is a possibility of water undermining the traffic way subgrade. See Standard Details, Paved Ditch and Underdrain. The design engineer shall review underdrain location in the field with the Harford County Department of Public Works prior to final submission of contract drawings.

M. Guard Fence

Guard Fence shall be erected on thoroughfares at points of extreme hazard to a vehicle leaving the traveled portion of the traffic way. Generally, this potential hazard develops at fills over 8' in vertical depth from the edge of the shoulder to the toe of the slope. Guard fence shall be placed at the edge of the normal shoulder, and the shoulder shall be widened 3' to provide backing.

Where traffic way construction ends in fill areas, temporary barricade posts shall be erected.

For guard fence and temporary barricade post construction, see Standard Details.

N. Sidewalks

Sidewalks shall be built when required by the Planning and Zoning Commission. These sidewalks to be located one foot from the right-of-way line. See Detail Sheet R-11.

The maintenance and replacement of the sidewalks to be the responsibility of the adjacent property owner.

O. Cross Sections and Quantities (Does not apply to Developer Contracts)

When required by the Harford County Department of Public Works, cross sections for special traffic ways and thoroughfares shall be taken at least every 50' and at all noticeable terrain breaks. The centerline and profile grade line shall be stationed correspondingly.

When required by the Harford County Department of Public Works, the design engineer shall provide quantity estimates for special traffic ways and thoroughfares. These estimates shall include all quantities for grading, paving curb and gutter, etc., and shall be tabulated as directed by the Harford County Department of Public Works.

P. Valley Gutters

Valley gutters, as shown in the Standard Details

R-15, shall be used only where approved by Harford County Department of Public Works but will normally be permitted where the approach road is a cul-de-sac or minor street providing access to less than 8 lots.

III. CONTRACT DRAWINGS AND DOCUMENTS TO BE SUBMITTED TO HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS

Attention is called to the General Instructions Section for additional information.

A. Preliminary Reports

For extensive traffic way projects, the design engineer shall especially discuss and illustrate the resulting effect of the project on adjacent property.

B. Contract Drawings. See Sample Drawing.

1. General. Traffic way layouts shall be prepared on sheets separate from other utilities. These drawings shall be made on standard size tracing linen with titling as indicated by the Sample Drawing, and shall be rendered in black ink with the exception of the top curb grade lines or centerline grade lines and their elevations. These latter shall be drawn with fine lines in soft black pencil to insure clear reproduction.

The plan shall be drawn to a scale of 1" = 50'. The profile shall be drawn to a horizontal scale of 1" = 50' and a vertical scale of 1" = 5'. The profile grid shall be designed for a corresponding 50 and 5 scale.

Drawing numbers of other utilities (water, storm drainage, etc.) being prepared for the development at the same time shall be shown on the plan portion of the traffic way drawings.

A location map drawn to a scale of 1" = 24000' shall appear in the Preliminary Plans and Final Plans.

2. Plan

Street Names. The names of all traffic ways shall be clearly lettered either along the street centerline or along one property line, whichever location is more convenient; however, all names on each drawing shall be placed in the same relative position. All names shall be first cleared with the Planning and Zoning Commission as being available for use. (To prevent duplication or similarity of names.)

Widths of Right-of-Way, Pavement and Easements - Widths of existing and proposed rights-of-way and pavements for each traffic way shall be shown with dimensioning. Slope easement where established and utility easements and rights-of-way which intersect traffic way rights-of-way shall be shown with dimensioning.

Topography - The location of all structures above the subgrade shall be shown, and when required, so shall all topography, including poles, trees, fences, hedges, property

markers, buildings and other structures. This topography shall be carried at least 100' beyond right-of-way lines, 200' beyond the ends of traffic ways or beyond approval limits, and 200' in each direction from an intersection. When shown, all measurements for utility structures, poles, trees, fences and hedges shall be dimensioned from the traffic way centerline. (For Developer Contracts - Topography shall be shown as described by Planning & Zoning Reg.)

Coordinates and Bearings - Bearings of traffic way centerlines and coordinates of centerline P.C.s and P.T.s and of intersecting traffic way centerline P.I.s shall be shown along the respective centerlines.

Horizontal Curve Information - Centerline curve information for each horizontal curve shall be tabulated on the plan in the following order:

Δ	=	—° —'	—"	(Angle of intersection)
D _C	=	—° —'	—"	(Degree of Curve)
CR	=	—° —'		(Centerline radius)
T	=	—° —'		(Tangent Length)
L	=	—° —'		(Length of Curve)

Δ , or Delta, is the external angle of intersection of the tangents at the P.I.

Stationing - Stationing along the centerlines of tangents shall be in even 100' stations, indicated by a small circle and the station number. Stationing along horizontal curves shall be indicated in like manner.

P.C.s and P.T.s of horizontal curves shall also be indicated by a small circle on the centerline, and their stations shown to the nearest hundredth of a foot.

Stations of P.C.s and P.T.s of curbs on circular portions of cul-de-sacs shall be shown on the plan.

P.I.s of intersecting traffic way centerlines shall be indicated by a small double circle at the centerline intersection, and the equality to the nearest hundredth of a foot shall be lettered thereunder.

Centerlines and traverse lines shall be drawn according to the Standard Symbols, General Instructions Section.

Match Lines - Traffic way plan portions shall be continued from one sheet to the next with match lines. In addition, the last 200' of each section of a traffic way plan shall be repeated on the next adjacent section.

P.I.s of Curb Lines - The points of intersection of curb lines shall be indicated by small linked crosses, and shall be identified thereunder as N.E., N.W., S.W., or S.E.

Direction of Drainage - Arrows approximately 1/2" long shall be drawn around all curb returns, and at all critical drainage points to indicate the direction of surface water flow in ditches or gutters.

Wherever the slope of a gutter is reversed from the traffic way slope, a note to that effect shall appear on the plan.

When an inlet adjacent to a curb return is to be set to such an elevation that it serves as the low point along the curb return, and the grades of the intersecting traffic ways are such that a true picture of the top curb grade in the inlet area is not feasible on the profile, then a note shall appear on the plan stating that the top curb grades in the inlet area shall be set in the field to locate the sump at the inlet.

Storm drainage - the design engineer shall indicate on the traffic way plans all of the proposed storm drainage system in the right-of-way. The storm drainage shall be shown schematically by a single dashed line, with inlets and drainage structures and direction of flow indicated.

If the storm drain system is of minor nature with no other utilities involved, the design engineer may include the storm drain plans on the traffic ways contract. For instructions on storm drainage, see Storm Drains Section and Bridges and Culverts Section.

3. Profiles (applies to County Contracts only. Developer Contract Requirements are as described by Planning & Zoning Commission).

Top Curb Grade, Centerline Grade - Top curb grade and centerline grade submitted for approval shall be shown by a fine line in soft black pencil, and designated "TOP CURB GRADE," and "LC" GRADE." On profiles where the grades are warped, one grade shall be shown by a solid line, and the other by a dashed line with a note designating each.

Circles, as shown in the Standard Symbols, shall be used on profile grade lines to designate vertical curve P.V.C.s, P.V.R.C., P.V.C.C.s, and P.V.T.s, and P.I.s of intersecting top curb lines or centerlines.

All percents of grades shall be shown to two decimal places.

Previously Established Top Curb Grade and Centerline Grade - Where a grade line shown on a drawing is taken from a Top Curb Grade, or Established LC Grade. The date established and the design drawing number of such previously established grades shall be noted on the profile. On existing pavement, grades shall be field surveyed.

Existing Ground Profiles at Centerlines and Property Lines - The profile of the existing ground along the centerline of a proposed traffic way and the profile of the existing ground line along property lines shall be shown by dashed ink lines as indicated in the Standard Symbols. The existing ground profiles shall be so labeled, and the date of the field survey shall be indicated.

Vertical Curves - A vertical curve shall be shown on profiles as a smooth curve between tangents. Although vertical curves are parabolic curves with changing radii, these curves may be represented on 50 and 5 scale profiles with a standard circular curve templates. The correct templates for given vertical curves will be tangent at the P.V.C. and P.V.T., and will pass through the computed middle ordinate elevation at the P.I. Computation of the middle ordinate will be required except where difficult to compute at unusual intersection situ-

ations.

LIBER

2 PAGE 194

Top Curb Grades for Cul-de-Sacs - Top curb grades for cul-de-sacs shall be shown independently as profiles running linearly around the perimeter of the cul-de-sac including the approach returns. An additional 100' overlap on each end of the linear profile shall be shown. See Sample Drawing. (not required for Developer Contracts.)

Top Curb Grade of Intersecting Streets - Top Curb grades for standard curb returns of intersecting streets normally need not be shown as linear profiles around the curb circumference, but shall be shown as profiles along the horizontal tangents from the P.C.s of the curb lines to the P.I.s of the curb lines. However, where returns exceed a 50' radius, or when a drainage problem is evident, top curb grades shall be shown independently as profiles running linearly around the circumference of the curb line as directed by the Harford County Department of Public Works.

Stationing and Elevations - Stations of all points of intersection of curb lines and pavement edges shall be determined at right angles to the centerline. Therefore, a face of curb line shall not be extended to intersect a centerline at a skew in order to establish a station.

Throughout profiles, elevations shall usually be shown for each 50' station with additional elevations every 25' throughout horizontal and vertical curves. Stationing shall be in ink at these points on the profile.

Elevations on tangents shall be computed; elevations on vertical curves shall be scaled, or preferably computed. Elevations shall be in pencil, and shall be shown to the hundredths of a foot.

Where curbs are warped, separate elevations shall be given for each curb and shall be identified as N.T.C., S.T.C., E.T.C., and W.T.C.

Stationing and elevations shall be shown for all curb return P.I.s and vertical curve P.C.s and P.T.s. Points of intersection of curb lines shall be designated P.I.N.E., P.I.N.W., P.I.S.E., and P.I.S.W. to correspond with the plan.

Extension of Profiles - At any point where a proposed traffic way is an extension of an existing traffic way, the profile of the existing centerline or top curb shall be shown for at least another 200' and the heights of the curb face noted. All traffic way profiles shall be extended a sufficient distance to define clearly the situation and this distance shall never be less than 200' beyond the approval limits requested except in the case of a profile terminating at a tee intersection. These profiles shall be independent and shown apart from the proposed top curb profile or profiles.

Where profiles must be broken and continued on the same or other sheets, a minimum of 200' of profile shall be repeated.

Profiles of Alleys and Entrances to Parking Areas - Where such profiles are required by the Harford County Department of Public Works, these profiles shall show the finished centerline grade for all alleys and entrances to parking areas independently and apart from the profiles of proposed streets and thoroughfares and they shall be clearly labeled.

4. Typical Sections

Typical sections of each type of proposed traffic way (i.e., paving width and/or right-of-way width) to be constructed shall be shown once on each set of construction drawings. These sections shall conform with the typical sections, shown in the Standard Road and Street Details, unless otherwise directed by the Harford County Department of Public Works.

5. Check List (applies to County Contracts only)

The design engineer shall use the check list as an aid in determining whether or not the listed items have been properly completed on the plan, and one copy shall be submitted by the design engineer with final Contract Plans.

6. Stakeouts and Grade Sheets (applies to County Contracts only)

All construction work to be done under Harford County contracts shall be completely staked out.

Grade sheets shall be submitted to the Harford County Department of Public Works to meet the following requirements:

(a) Where there is curb and gutter, or mountable curb, separate grade sheets will be submitted for each curb.

(b) Where there is no curb and gutter or mountable curb, a grade sheet for the centerline grade shall be submitted.

(c) When storm drainage is included under the trafficways contract, a separate grade sheet for storm drainage shall be submitted.

Stakeouts shall conform to stationing shown on the plans and profiles. Horizontal curve points and radius points of returns shall be staked, and stakes shall be required at 50' stations on tangents and 25' stations on horizontal and vertical curves.

All hubs shall be offset no further than 6' 0" from the line of construction. Line and grade shall be staked 100' beyond construction limits in areas where there is no existing curb or paving.

Grade sheets shall be 8½" x 11", either typewritten sheets or prints from a tracing, and shall comply with the Standard Form for Grade Sheet (Standard Details).

A separate grade sheet shall be submitted for each curb or other line of construction. Grade sheets shall show stations, elevations of both grade stake and finished construction, and offsets to construction lines as well as cuts and fills.

C. Contract Specifications

Proposed work not covered by Harford County Specifications shall be covered by supplementary contract specifications similar to those shown in the Contract Specifications Section. See Contract Specifications in the General Instructions section for additional information.

D. Estimate of Quantities (Applies to County Contracts Only)

The design engineer shall furnish estimates of quantities including contingent items in a form similar to that shown in the Contract Specifications Section (Improvements to Traffic Ways).

E. Design Calculations (Applies to County Contracts only)

The design engineer shall submit design calculations made in connection with the project. The calculations shall be submitted along with the contract drawings and shall be as specified in the General Instructions Section.

ROADS AND STREETS CONTRACT DRAWINGS

LOCATION (Subdivision Name and Section)

DATE

CHECKED BY (Company Name and Person)

(P) - Pencil (I) - Ink

PLAN

A. Supplementary Information

1. . . .Property-all lines abutting traffic way R/W shown in proper symbols (I)
2. . . .Property-existing R/W shown and dimensioned (I)
3. . . .Property-subdivision plat book and folio numbers when available (I)
4. . . .Property-subdivision layout checked with final subdivision plat (I)
5. . . .Property-subdivision name, section, block letter when available (I)
6. . . .Topography-field run checked for poles, fences, buildings, driveways, hydrants, shrubs, trees, pavement walks, symbols, etc. (I)
7. . . .Topography-carried 100' beyond R/W lines and 200' beyond ends of traffic ways or beyond approval limits (I)
8. . . .Topography-show existing pavement and label type of surface (I)
9. . . .Utilities-show storm drain facilities being prepared; with proper symbol (I)
10. . . .Utilities-existing utilities shown and labeled (I)
11. . . .Scales-shown in proper location

B. Proposed Road and Streets (Traffic Ways)

12. . . .Traffic ways-names of all traffic ways in proper positions (I)
13. . . .Traffic ways-limits of contract clearly defined (P)
14. . . .Traffic Ways-limits of new R/W shown and dimensioned (I)
15. . . .Traffic ways-limits of necessary easement shown and dimensioned (I)
16. . . .Traffic ways-widths of proposed pavement properly shown and dimensioned (I)
17. . . .Traffic ways-centerlines correctly shown and stationed (I)
18. . . .Traffic ways-complete bearing information (I)

19. . . .Traffic ways-curve data in proper order; check computations (I)
20. . . .Traffic ways-proper radii returns to face of curb or edge of pavement (I)
21. . . .Traffic ways-P.I.s of curb lines located and labeled (I)
22. . . .Traffic ways-direction of flow arrows at curb returns and critical drainage points. (I)
23. . . .Traffic ways-slopes of non-standard gutters noted on plan (I)
24. . . .Traffic ways-locations of curb, gutter, inlets, side ditches, outlet ditches, swales or mountable curb and gutter shown and labeled where necessary (I)
25. . . .Traffic ways-typical sections properly drawn and labeled (I)
26. . . .Traffic ways-guard fence or barricade post locations noted (I)
27. . . .Traffic ways-cul-de-sacs or tee streets correctly drawn; dimensioned (I)
28. . . .Traffic ways-horizontal curves meet requirements for design speed

PROFILE

A. Supplementary Information

1. . . .Property-existing ground along property lines shown with proper symbol and labeled with survey date (I)
2. . . .Topography-existing ground along proposed centerline shown with proper symbol and labeled with survey date (I)
3. . . .Topography-previously established grades labeled with date of establishment and original drawing number when available (I)
4. . . .Traffic ways-existing traffic ways shown and labeled (I)
5. . . .Topography-existing ground lines or top curb lines extended 200' at tie-ins or breaks. Height of existing curb faces noted (I)

B. Proposed Road and Streets (Traffic Ways)

6. . . .Traffic ways - names of all traffic ways in proper positions (I)
7. . . .Traffic ways- centerlines of intersecting traffic ways shown and labeled (I)
8. . . .Traffic ways- top curb grade or centerline grade properly shown and labeled (P)

Design Figure R-A

GENERAL

9. . . .Traffic ways- profiles of warped curbs shown with proper symbol (one solid line; the other a dashed line) (P)
10. . . .Traffic ways-P.V.C.s, P.V.T.s indicated, and P.I.s of intersecting curb lines indicated and labeled (P)
11. . . .Traffic ways-grades meet minimum and maximum gradient requirements
12. . . .Traffic ways-tangent percents of grade shown to two decimal places. (P)
13. . . .Traffic ways-vertical curves meet sight distance and minimum length requirements
14. . . .Traffic ways-complete stationing at 50' minimum intervals and wherever else required (I)
15. . . .Traffic ways-elevations shown at 50' minimum intervals and wherever else required (P)
16. . . .Traffic ways - linear profile around cul-de-sacs (P & I)
17. . . .Traffic ways - profiles carried 200' beyond profile limits (P & I)
18. . . .Traffic ways - 200' minimum of profile repeated at breaks
19. . . .Traffic ways - finished centerline grade profiles shown for alleys and entrances to parking areas as required (P & I)
20. . . .Traffic ways - check all computations
1. . . .Check recommendations of preliminary subdivision submission
2. . . .Title block- date of approval of traffic way grade, designer's and tracers' initials (I)
3. . . .General notes (I)
4. . . .Title of drawing- subdivision name and section, election district, traffic way name (I)
5. . . .Engineer's seal, or engineer's signature and license number (I)
6. . . .Bench mark reference and description (I)
7. . . .Location Plan- scale 1" = 500' plus small scale when required; site of proposed work shaded (P)
8. . . .Location Plan- names of proposed and adjacent traffic ways (I)
9. . . .Location Plan- arterial streets leading to sites shown (I)
10. . . .Permits- serial numbers of permits as required from State Roads Commission, Baltimore City, or others (I)
11. . . .North arrow properly oriented (I)
12. . . .Three coordinate "tics" labeled at multiples of 250' (I)
13. . . .Additional revisions as noted on check print

DESIGN SPEED M.P.H.	HORIZONTAL ALIGNMENT			VERTICAL ALIGNMENT	
	SIGHT DISTANCE	MINIMUM RADIUS	SUPERELEVATION WARPING AND WIDENING	SIGHT * DISTANCE	MAXIMUM ** GRADES
30	STOPPING	380' (Except Certain Deltas)	Curves With 200' Radius And Less To Be Warped, And With 500' Radius And Less To Be Widened.	STOPPING	7 % Preferred 10 % Absolute
40	STOPPING	670'	—	STOPPING	6 % Preferred 8 % Absolute
40 (OR SPECIAL)	STOPPING (OR SPECIAL)	670' (OR SPECIAL)	SPECIAL	STOPPING (OR SPECIAL)	SPECIAL
50	STOPPING (PROVIDE AT LEAST ONE PASSING SGT. DISTANCE PER MILE)	700'	SUPERELEVATED ACCORD- ING TO TABLE IN TEXT, SECTION "E" NO WIDENING	STOPPING (PROVIDE AT LEAST ONE PASSING SGT. DISTANCE PER MILE)	SPECIAL

*-IN ADDITION TO INDICATED SIGHT DISTANCE, TRAFFIC WAY DESIGN SHALL
MEET HEADLIGHT SIGHT DISTANCE REQUIREMENT.

** - MINIMUM TRAFFIC WAY GRADE SHALL BE 0.50 %

REVISED	
DATE	BY

HARFORD
COUNTY
DEPARTMENT
OF
PUBLIC WORKS

APPROVED.

R. J. [Signature]
DIRECTOR
[Signature]
DIVISION OF ENGINEERING

DATE

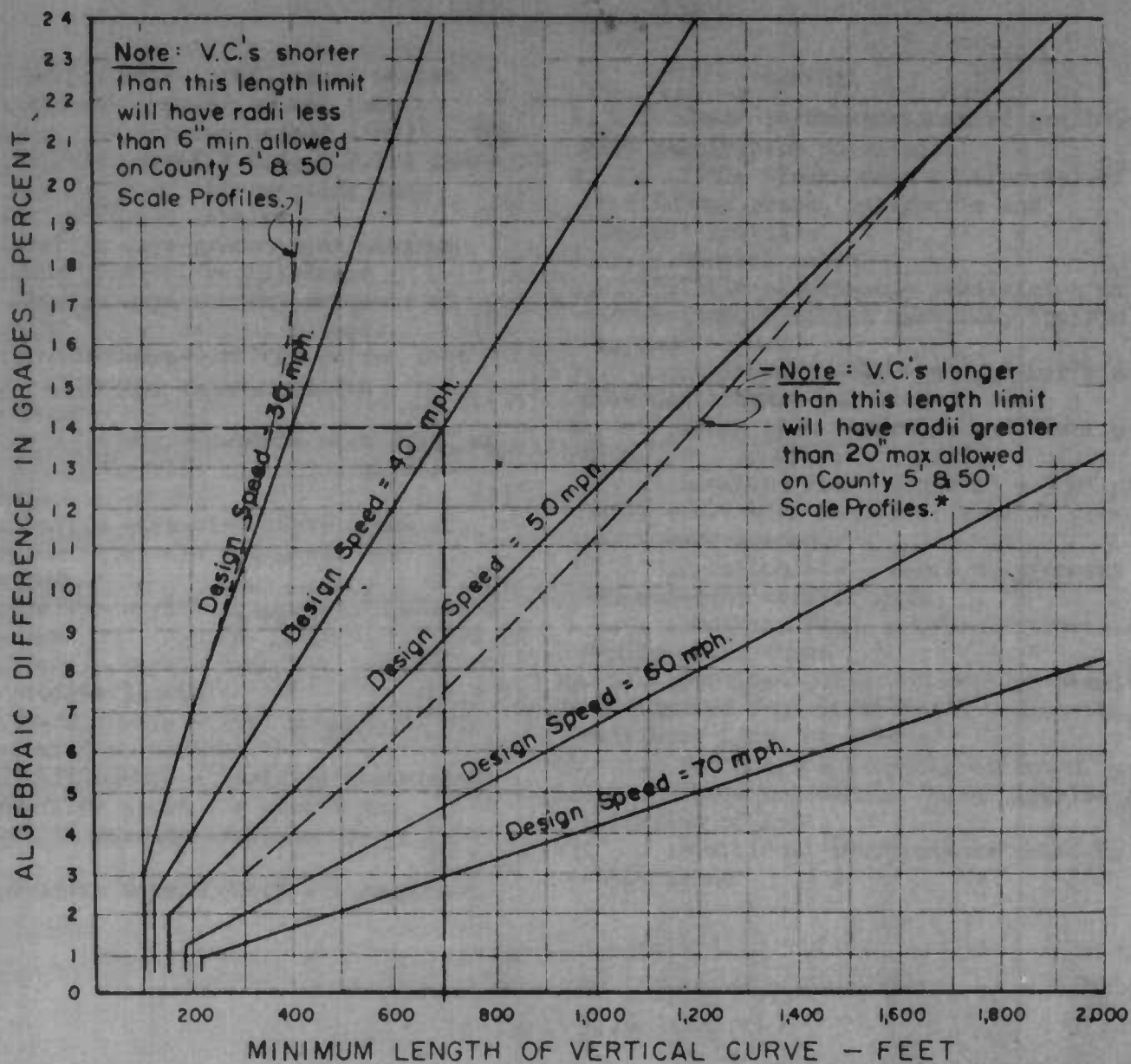
STANDARD ROAD & STREET DESIGN
GEOMETRICS AND
ROAD CONSTRUCTION

R-B

DESIGN CONTROLS FOR OVER-VERTICAL CURVES

STOPPING SIGHT DISTANCE

HEIGHT OF EYE = 3.75', OBJECT = 6"



* The 20" Maximum Radius Limit Applies Only To V.C.s Involving Algebraic Changes In Tangent Grades.

V.C.s Flatter Than The 20" Radius Limit Shall Be Compounded To Meet That Maximum Limit At Crest

Example :

Design Speed - 40 mph.
 Grades of Traffic Way, + 8 % and - 6 %.
 Algebraic Difference in Grade : 14 (%)
 From Table , Algebraic difference of 14
 and design speed of 40 mph requires
 a V.C. min. length of 700' for safe
 stopping sight distance.

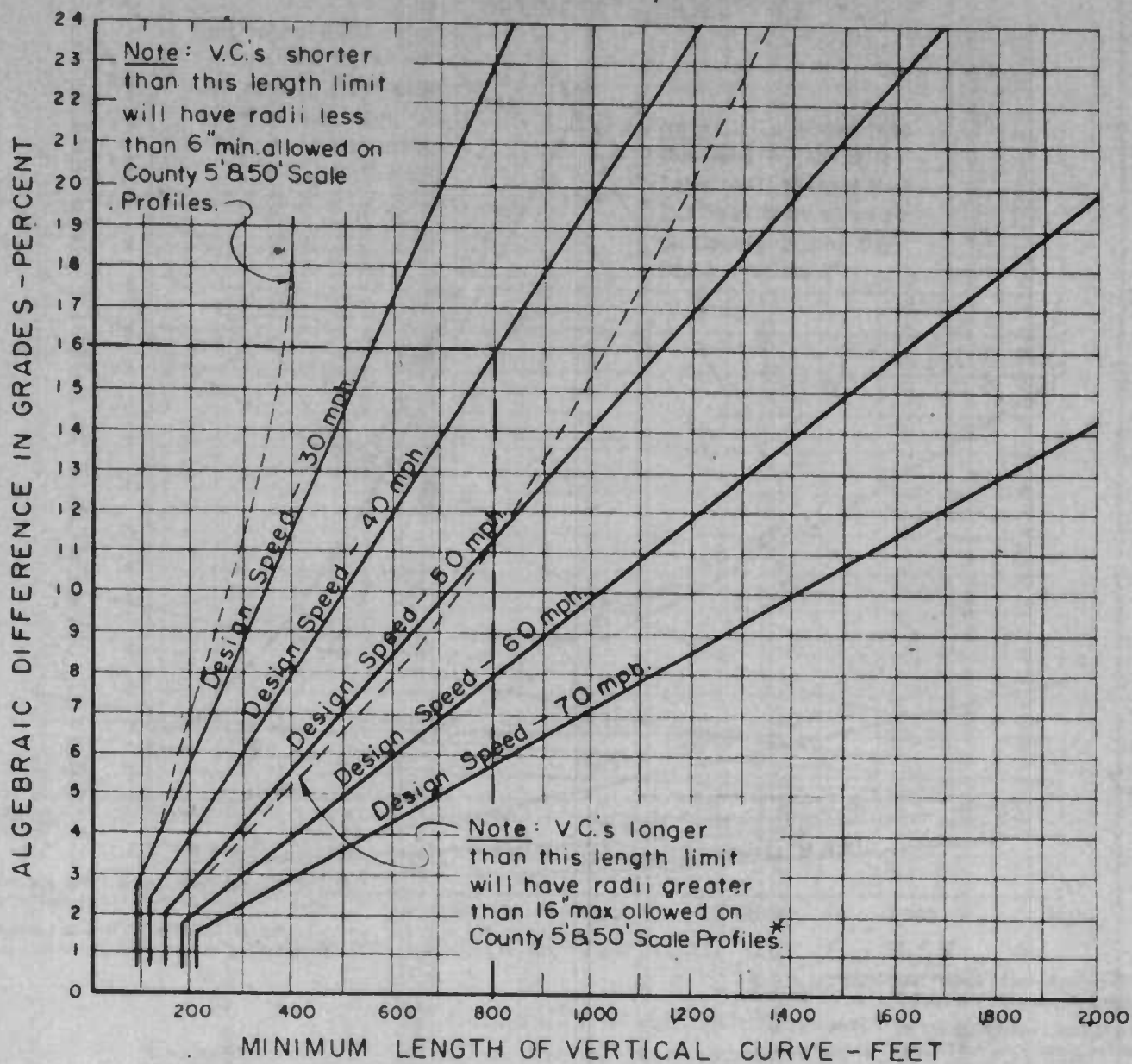
REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>H. J. Duggan</i> DIRECTOR	REVIEWED	STANDARD ROAD & STREET DESIGN	
	<i>Harold Hamilton</i> DIVISION OF ENGINEERING		STOPPING SIGHT DISTANCE CHART FOR DETERMINATION OF MINIMUM LENGTH OF OVER-VERTICAL CURVES	
	1/1/66. DATE			R-C

DESIGN CONTROLS FOR UNDER-VERTICAL CURVES

HEADLIGHT SIGHT DISTANCE

HEIGHT OF HEADLAMP = 2'0", OBJECT = 0'6"



* The 16' Maximum Radius Limit Applies Only To V.C.'s Involving Algebraic Changes In Tangent Grades.
V.C.s Flatter Than The 16' Radius Limit Shall Be Compounded To Meet That Maximum Limit At Sumps.

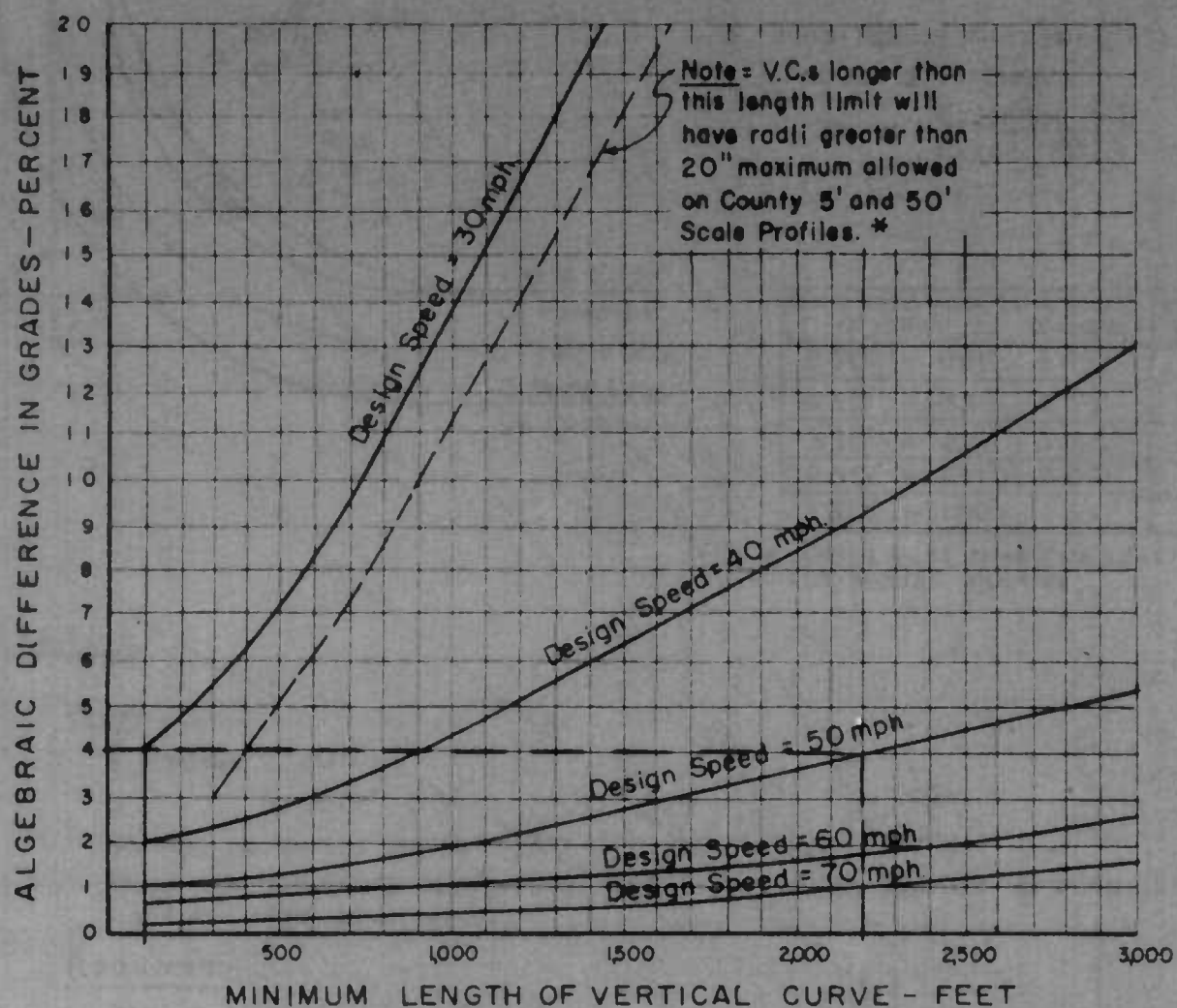
Example:

Design Speed - 40 mph
Grades of Traffic Way - 9% & +7%
Algebraic Difference in Grade: 16 (%)
From Table, Algebraic difference of 16 and design speed of 40 mph requires a V.C. min length of 800' illuminated stopping distance at night.

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>K. J. [Signature]</i> DIRECTOR	REVIEWED	STANDARD ROAD & STREET DESIGN	STOPPING SIGHT DISTANCE CHART FOR DETERMINATION OF MINIMUM LENGTH OF UNDER-VERTICAL CURVES	R - D
	<i>[Signature]</i> DIVISION OF ENGINEERING				
	1/1/66. DATE				

DESIGN CONTROLS FOR OVER-VERTICAL CURVES
 PASSING SIGHT DISTANCE
 HEIGHT OF EYE=3.75', OBJECT=4.5'



* The 20'' Maximum Radius Limit Applies Only To V.C.s Involving Algebraic Changes in Tangent Grades. V.C.s Flatter Than The 20'' Radius Limit Shall Be Compounded To Meet That Maximum Limit At Crest

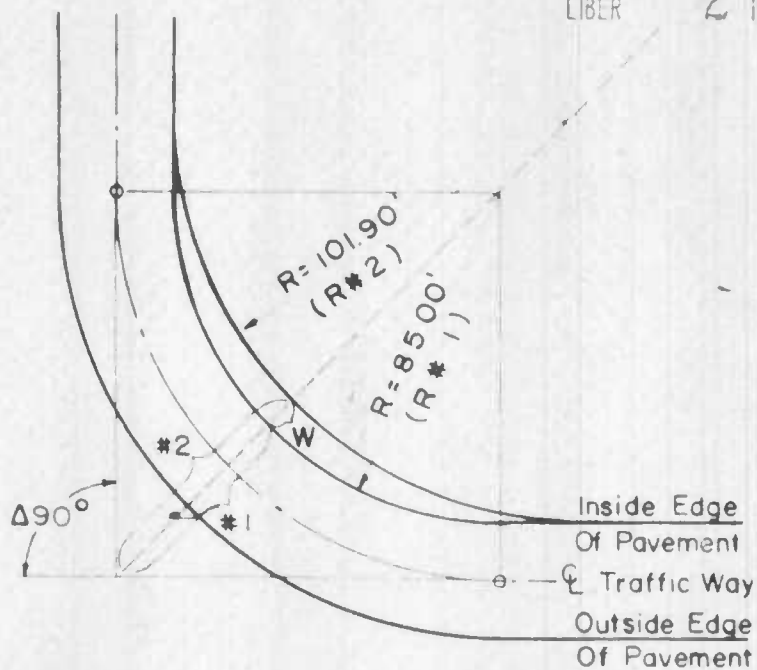
Example:

Design Speed — 50 mph
 Grades of Traffic Way + 3 % and -1 %
 Algebraic Difference in Grade : 4 (%)
 From Table , Algebraic difference of 4 and design speed of 50 mph requires a V.C. min. length of 2,200' for safe passing sight distance.

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. J. Dwyer</i> DIRECTOR <i>Harold J. Hamilton</i> DIVISION OF ENGINEERING 11/1/66 DATE	REVIEWED	STANDARD ROAD & STREET DESIGN	R-E

PASSING SIGHT DISTANCE CHART
 FOR DETERMINATION OF MINIMUM
 LENGTH OF OVER-VERTICAL CURVES



1. Find External # 1, using the following formula :

$$\text{External \# 1} = R \# 1 \cdot \text{Exsec } 1/2 \Delta$$

2. Add Widening W to External # 1. This will be External # 2.

3. Find Radius # 2, using the following formula :

$$R \# 2 = \frac{\text{External \# 2}}{\text{Exsec } 1/2 \Delta}$$

CENTER LINE RADIUS OF CURVE	MIN LENGTH OF CURVE *	WIDENING AT MIDPOINT
500' - 451'	400'	3'
450' - 351'	350'	4'
350' - 251'	300'	5'
250' - 151'	200'	6'
150' - 100'	150'	7'

* CURVES LESS THAN THIS LENGTH WILL NOT REQUIRE WIDENING

Example :

Given :

$$\text{Radius} = 100'$$

$$\Delta = 90^\circ - 00'$$

Normal pavement width = 30' (Right of Way = 50')

Required Widening for $\text{C.R. of } 100' = 7'$ (to be applied at midpoint of inside edge pavement.)

Required :

Radius (R # 2) of widening.

Solution :

$$\text{Radius of inside edge of pavement (R \# 1)} = 100' - 15' = 85'$$

$$\text{External \# 1} = 85 \times \text{Exsec } 1/2 \Delta = 85 \times .41421 = 35.21$$

$$\text{External \# 2} = 35.21 + 7 = 42.21$$

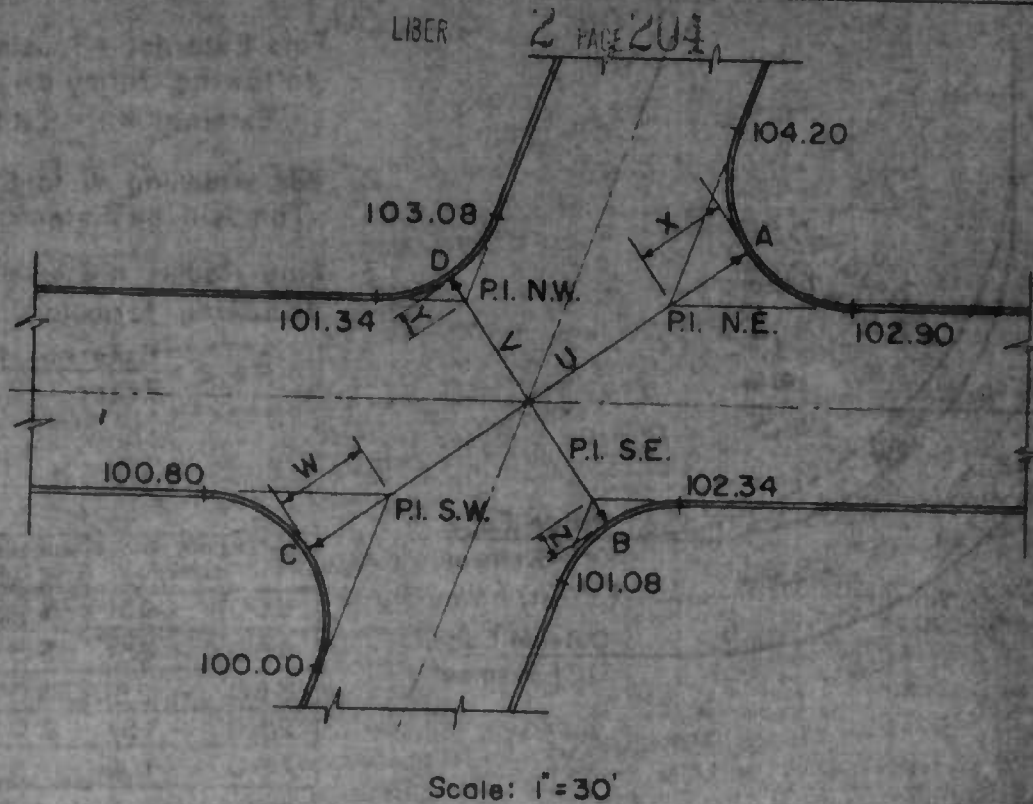
$$\text{Radius (R \# 2)} = \frac{\text{External \# 2}}{\text{Exsec } 1/2 \Delta} = \frac{42.21}{.41421} = 101.90'$$

Note :

The Radius of the inside Property Line in this example will be 91.90'. (101.90' - 10.00')

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>E. J. O'Connell</i> DIRECTOR	REVIEWED	STANDARD ROAD & STREET DESIGN WIDENING COMPUTATION	R - F
	<i>Harold J. Hamilton</i> DIVISION OF ENGINEERING			
	DATE			
	11/1/66			



TYPICAL SOLUTION OF ELEVATION OF TOP CURB P.I.

1. Average elevations of P.C. and P.T. of each curb section.
pt. 'A' 103.55, pt. 'B' 101.71
pt. 'C' 100.40, pt. 'D' 102.21
2. Distance U
Distance V
82 feet
45 feet
3. Distance W & X
Distance Y & Z
15 feet
4.5 feet
4. Difference in elevation - pt. A & pt. C
Difference in elevation - pt. B & pt. D
 $103.55 - 100.40 = 3.15$
 $102.21 - 101.71 = 0.50$
5. $W(\text{or } X) \div U$ times difference in elevation
pt. A to pt. C
 $15 \div 82 \times 3.15 = 0.60$
 $Y(\text{or } Z) \div V$ times difference in elevation
pt. B to pt. D
 $4.5 \div 45 \times 0.50 = 0.05$
6. Determine elevation of P.I.'s
P.I. NE $103.55 - 0.60 = 102.95$
P.I. SE $101.71 + 0.05 = 101.76$
P.I. SW $100.40 + 0.60 = 101.00$
P.I. NW $102.21 - 0.05 = 102.16$

REVISED	
DATE	BY

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>L. J. Duggan</i> DIRECTOR	REVIEWED 	STANDARD ROAD & STREET DESIGN ELEVATION OF TOP CURB P.I. FOUR CORNER INTERSECTION	R-G
	<i>Harold Hamilton</i> DIVISION OF ENGINEERING			
	11/1/66 DATE			

11/1/66 DATE LENGTH OF CURB

STORM DRAIN DESIGN STANDARDS

	Page
I GENERAL	17
II DESIGN	17-32
A. Open Channel Versus Closed Conduits.....	17
B. Closed Conduit Systems.....	17-29
1. Location.....	17-18
2. Quantity Run Off.....	18-21
3. Selection of Inlets.....	21-22
4. Size of Drains.....	22
5. Materials.....	22-23
6. Appurtenances and Special Construction.....	23-25
7. Hydraulic Gradient.....	25-28
8. Clearance.....	29
9. Structural Considerations.....	29
C. Improved Open Channels.....	29-32
1. Location and Alignment.....	29-30
2. Quantity of Runoff.....	30
3. Size of Channel.....	30-31
4. Materials.....	32
III CONTRACT DRAWINGS AND DOCUMENTS TO BE SUBMITTED TO THE DEPARTMENT OF PUBLIC WORKS.....	32-34
A. Preliminary Reports.....	32
B. Contract Drawings.....	32-33
1. Plan.....	32-33
2. Profile.....	33
3. Other Utilities.....	33
4. Location and Design Information.....	33
C. Estimate of Quantities.....	33-34
D. Design Calculations.....	34
1. Hydraulic Design.....	34
2. Structural Design.....	34
3. Coordinates.....	34
4. Results of Boring and Test Pits.....	34

DESIGN FIGURES

1. Sample Drawing
 - D-A Rainfall Intensity Curves
 - D-B "C" Factors for Typical Developments-Sandy Soils
 - D-C "C" Factors for Typical Developments-Clay Soils
 - D-D Overland Flow Time
 - D-E Gutter Flow - Velocity and Time

DESIGN FIGURES

LIBER

2 PAGE 205

- D-F Head Losses in Structures - "A", "B" & "C" Losses
- D-G Head Losses in Structures - "D" Losses
- D-H Inlet Capacity Curves "S" - Comb. Inlets
- D-I Inlet Capacity Curves - "E" Comb. Inlets
- D-J Inlet Capacity Curves - "A" & "B" Inlets
- D-K Storm Drain Check List

STANDARD DETAILS

- D-1 Trenches, Widths, Cradles and Repaving
- D-2 Type "A-1" Manhole
- D-2A Type "B" Manhole
- D-3 Type "C" Manhole
- D-4 Heavy Traffic Manhole Frame and Cover
- D-5 Sidewalk Frame and Cover
- D-6 Bend Structure
- D-7 Connection Locations to Bend Structures
- D-8 Type I Junction Chamber - Top Slab Reinforcing
- D-9 Type "A" Headwall
- D-9A Type "A" Headwall - Metal Pipe Arch
- D-10 Type "B" Headwall
- D-11 Type "C" Headwall
- D-12 Cut off Wall and Paving
- D-13 Type "S" Inlet
- D-14 Double Type "S" Inlet
- D-15 Type "S" Comb. Inlet
- D-16 Double Type "S" Comb. Inlet (normal to curb)
- D-17 Double Type "S" Comb. Inlet (Parallel to curb)
- D-18 Type "C" Inlet
- D-19 Yard Type Inlet
- D-20 Inlets "D" and "G"
- D-21 "S" Grade Details
- D-23 Type "E" Comb. Inlet
- D-24 Double Type "E" Comb. Inlet
- D-25 Type A-1 Inlet
- D-26 Type A-2 Inlet
- D-27 Type B-1 Inlet
- D-28 Type B-2 Inlet
- D-29 Curb Type Inlet with Deflectors
- D-30 Open Channels
- D-31 Joints for Concrete Channels
- D-32 Joints for Concrete Channels
- D-33 Weep Holes for Concrete Channels

SECTION II

HARFORD COUNTY

DEPARTMENT OF PUBLIC WORKS

STORM DRAIN DESIGN STANDARDS

I. GENERAL

Storm water runoff is collected and conveyed in closed conduit systems (inlets, inlet connections and drains) and open channel systems (ditches, streams, rivers, culverts and improved open channels.)

Instructions for design of Closed Conduit Systems and Improved Open Channels are contained in this section. Instructions for design of culverts are contained in Bridges and Culverts section.

Approved land-use maps are available in the Office of Planning and should be utilized in design.

II. DESIGN

A. Open Channels Versus Closed Conduits.

Where the volume of flow from rainfall runoff would require drain sizes larger than 48", the flow shall be conveyed in improved open channels (as discussed in this section) wherever possible. Design engineers shall consider improved open channel flow where the flow would require 24" to 48" pipes.

B. Closed Conduit Systems. (See Sample Drawing, Design Figures).

1. Location

(a) Drains

(1) In New Subdivisions. In new subdivisions Storm Drains shall normally be installed at the centerline of the street. Storm Drains shall be installed within the pavement area (no less than 6' from the curb or proposed curb) wherever possible. Where it is not feasible for manholes to be located within the pavement they shall be located wholly within the grass plot or wholly within the sidewalk.

(2) In Existing Developments. In existing developments, drains shall generally be located as discussed above. However, the location of other existing and proposed utilities and traffic conditions shall be fully considered in determining the location of drains. Where the Department of Public Works has determined that two-way or one-way traffic shall be maintained, design engineers shall consider locating the drain between the curb and the

property line. Where the drain is thus located, exact location shall be determined from the distance required for inlet connections but shall be no less than 3' from the curb.

(3) In Parks or Public Rights-of-Way.

Where location of drain would require removal of or damage to trees within parks or public rights-of-way, design engineers shall obtain approval of the State Department of Forestry for drain alignment and trees to be removed.

(b) Inlets. Inlets where required at inter-sections shall be 5' upgrade from P.C. of curb (or proposed curb). See Selection of Inlets, this section, for spacing requirements.

2. Quantity Runoff.

The rational formula Q-CIA shall be used to determine quantities of runoff.

Q-Quantity of runoff, cubic feet per second

C-Runoff coefficient (ratio of runoff to rainfall)

I-Rainfall intensity, inches per hour

A-Tributary area, acres

(a) Runoff Coefficient ("C"). The runoff coefficient, used in computing flow to a point under consideration, shall be a composite of the "C" factors for all the areas tributary to this point. In areas where the nature of future development is uncertain, design engineers shall consider future development in accordance with the Office of Planning "Land Use Program."

On the following page, Tables A, B, and C list the typical runoff coefficients ("C" factors) for various ground cover, types of soil and ground slopes.

Design engineers shall determine "C" factors from field inspection of area and consideration of type of soil and average slopes of tributary areas. "C" factors for developments shall represent a weighted average of the areas covered by the classification shown in Table A. Tables "B" and "C" show the development of composite "C" factors for typical residential subdivisions in clay and sandy soils and are listed for guidance only.

(b) Rainfall Intensity. Rainfall intensity shall be determined from the rainfall intensity curves (See Design figures.) These curves indicate maximum rainfall intensities for periods (times of concentration) from 5 minutes to 2 hours, occurring with a frequency of once in 1, 2, 5, 10, 20, 50 and 100 years.

The frequency curve shall be selected as described below and time of concentration computed as described below. Using the selected curve and time of concentration to the point considered, the rainfall intensity shall be determined. Selection of Frequency Curves. Normally the 10 year frequency curve shall be used in the design of storm drains.

Where flow from a 10 year storm in any particular drain exceeds 200 cfs the design engineer shall check to determine that the flow from a 20 year storm can be carried

by a combination of the drain and surface storage. Surface storage shall consist of the street (considered as a channel to top of curb), swales or other satisfactory floodways for which right-of-way has been obtained.

Drains from sump areas, where satisfactory floodways as described above cannot be obtained, shall be designed to carry the flow from a 20 year storm.

RUN OFF COEFFICIENTS

Table A

BASIC "C" FACTORS FOR VARIOUS SURFACES AND SLOPES

Surface	Relatively Flat Less than 2.0%	Average 2.0% to 7.0%	Steep 7.1% & Steeper
Roofs	0.95 (all slopes)		
Pavement and Concrete Walks	0.95 (all slopes)		
Clay Soils (Clay & Loam)			
Sparse Vegetation (Little loam)	0.40	0.55	0.70
Lawns	0.15	0.20	0.30
Dense Vegetation (Weeds & Brush)	0.10	0.15	0.20
Dense Wooded Area	0.07	0.12	0.17
Sandy Soils (sand & loam)			
Sparse Vegetation	0.20	0.30	0.40
Lawns	0.07	0.12	0.17
Dense Vegetation (Weeds & Brush)	0.05	0.10	0.15
Dense Wooded Area	0.03	0.08	0.13

Table B

CLAY AND LOAM SOILS PREDOMINANT DERIVED "C" FACTORS FOR TYPICAL DEVELOPMENTS

"C" Factor for Various Slopes

Type of Development	Relatively Flat Less than 2.0%	Average 2.0% to 7.0%	Steep 7.1% & Over
Detached Houses (20,000 sq. ft. or greater lots)	0.25	0.30	0.40
Detached Houses (6,000 sq. ft. lots)	0.40	0.45	0.50
Apartments (impervious area = 30%)	0.40	0.45	0.50
Apartments (impervious area = 45%)	0.50	0.55	0.60
Group Homes (3,000 sq. ft. lot, 6 in group)	0.50	0.55	0.60
Group Homes (2,000 sq. ft. lot, 6 in group)	0.60	0.65	0.70

RUN OFF COEFFICIENTS

Table C
 Sand and Loam Soils Predominant
 Derived "C" Factors for Typical Developments
 "C" Factor for Various Slopes

Type of Development	Relatively Flat Less than 2.0%	Average 2.0% to 7.0%	Steep 7.1% & Over
Detached Houses (20,000 sq. ft. or greater lots)	0.20	0.25	0.30
Detached Houses (6,000 sq. ft. lots)	0.30	0.35	0.40
Apartments (impervious area = 30%)	0.30	0.35	0.40
Apartments (impervious area = 45%)	0.45	0.50	0.55
Group Homes (3,000 sq. ft. lots, 6 in group)	0.45	0.50	0.55
Group Homes (2,000 sq. ft. lots, 6 in group)	0.55	0.60	0.65

Time of Concentration. Rate of run off to any point under consideration is a function of the average rainfall rate during the time required for water to flow from the remotest part of the drainage area to the point, said time of flow being called the "time of concentration". In the design of storm drains the time of concentration shall be determined for the ultimate future drainage system (the system extended to the upper reaches of the drainage area).

The time of concentration is the sum of the inlet time and the time of flow in drains.

Inlet time (See Design Figures) is the combined time of overland flow and flow in swales, gutters and ditches. Overland flow is sheet flow across lawns, graded areas, fields and paved areas. See Design Figures to determine overland flow time. A maximum overland flow distance of 75' shall be used.

Time of flow in drains, gutters, swales, and ditches shall be determined from the relationship, $\text{time} = \frac{\text{distance}}{\text{velocity}}$.

Velocity shall be determined by the Manning Formula as discussed under Size of Drains.

Design Figures show velocity of flow in swales carrying 0.1 cfs; velocity and flow time for the standard curb and gutter sections on various slopes; and velocity for pipes flowing full on various slopes.

The time of concentration for flow into inlets shall be computed separately from the time of concentration for drain flow.

C. Area. The area used in computations shall be the area which provides the greatest quantity of flow. Including a long, narrow extension into undeveloped land, of a drainage area otherwise surrounding developed land might indicate less runoff than the portion of the area surrounding the developed land. For example - 20 acres of land surrounding small cottages has a "C" of 0.45 and an "I" of 5.5. Including a long narrow strip of land tributary from a nearby cemetery increases the area 5 acres and decreases the composite "C" to 0.40 and the "I" to 4.7. In the first case the Q is 49.5 cfs; the second, only 47 cfs. Since conditions in the cemetery will not likely change, the flow used would be 49.5 cfs.

Where a minor branch drain of a major lateral must be sized for a 20 year storm while the major lateral size requires a 10 year frequency storm, the CA design value for the branch drain shall be adjusted to produce a runoff quantity equal to the 20 year frequency storm runoff while using a 10 year intensity value for the minor branch. Thus, CA (adjusted) - Q_{20}/i_{10} . The adjusted CA value for the minor branch drain shall be incorporated into the major lateral design where applicable.

3. Selection of Inlets.

(a) Type. Generally "combination inlets" (grates and curb openings) shall be used on streets with existing or proposed curbs; either Type "S" combination or Type "E" combination shall be used depending on capacity requirements. Type "A" or "B" inlets (Curb openings only) shall be used in sumps or where existing utilities preclude construction of grates within the pavement. Type "A" or "B" inlets shall be with or without deflectors in accordance with required capacity. Inlets with grates or deflectors shall not be depressed in traffic lanes where parking is not permitted.

(b) Spacing. Inlets shall be constructed in all sumps and at all intersections where conditions of street crown and/or quantity of flow require. Inlets shall be spaced so that gutter flow limitations as described below are not exceeded.

Maximum permissible flow in a standard curb and gutter section along the route of the proposed drain shall be 5.0 cfs. Where extensions beyond the proposed route of the drainage system would be required to limit the flow to 5.0 cfs, this limiting flow may be increased provided that the following conditions exist:

(1) Gutter Flow does not exceed gutter capacity. Maximum capacity of standard 7" curb and gutter section in good condition shall be 10.0 cfs for grades 2.0% and greater; 7.0 cfs for grades less than 2.0% and sump approaches.

(2) No property damage or great inconvenience would be involved. Valley gutters will not be permitted on collector streets but may be used, upon approval of Department of Public Works on short cul-de-sacs and secondary streets.

(3) Inlets of sufficient capacity can be installed to intercept the gutter flow.

(C) Capacity. Inlet capacities shall be determined by either the curves or equations developed by Johns Hopkins Storm Water Research Committee, taking into consideration street grades, road cross slopes, gutter capacities and permissible spread of surface flow in the gutter.

Permissible spread will depend upon the importance of the street, road section, economics of the drainage system and other features peculiar to each individual project. Therefore, spread for each project shall be approved by the Department of Public Works. In general, spread of flow in a curbed street should be under 10 feet, except in sumps where up to 12 feet or a 6 inch depth may be permissible.

In general, inlets shall be selected as to type and spacing to intercept a minimum of 85% of the gutter flow. However, this requirement may be waived if approved by the Department of Public Works because of the variable spread requirement.

4. Size of Drains.

Drain sizes shall be primarily established as described below. Adjustments of the sizes thus determined shall be made, if warranted, by the Hydraulic Gradients. Drain size shall be primarily established by the relations $Q=av$ where:

- Q = quantity of flow in cfs =
quantity of runoff as determined in II-B-2 (Page 1)
- a = required area in square feet
- v = velocity in feet per second
velocity shall be determined by the Manning Formula
- $v = \frac{1.486}{n} r^{2/3} s^{1/2}$ where
- n = coefficient of roughness (see table following)
- r = hydraulic radius in feet = $\frac{\text{cross sectional area}}{\text{wetted perimeter}}$
- s = slope of hydraulic gradient in feet per foot

In the Design Figures are charts offering a solution of the Manning Formula for the circular pipes and arch pipes normally encountered. These charts are based upon pipes flowing full. Design Figures offer solutions of velocity and discharge for partial depth flow.

5. Materials.

Below is a list of the materials acceptable for storm drain construction. Accompanying each material is the roughness coefficient to be used in the solution of the Manning Formula. See General Instruction Section for explanation of abbreviations.

5. Materials (cont'd)

<u>Material</u>	<u>Manning "n"</u>
RCSP, RCCP, in lengths 8' and longer	.013
CIP, CISPX	.013
VCP, VCPX, RCSP, RCCP, UCP, UCPX in lengths 4' and shorter	.014
Monolithic Concrete - Steel Forms	.013
Monolithic Concrete - Plywood or Masonic forms	.013
Vitrified Brick (Bends, Junction Chambers, etc.)	.017
Galvanized Corrugated Metal Pipe (CMP)	
Unpaved circular or arch pipe, plain or coated	.024
Circular pipe, 25% paved BCCMP	.021
Circular pipe, 50% paved BCCMP	.018
Circular pipe, 100% paved BCCMP	.013
(This pipe to be used only on an experimental basis as approved by the D.P.W.)	
Arch pipe BCCMPA, 40% paved	.019

6. Appurtenances and Special Construction.

The top elevation of all inlets, manholes, valve boxes or any other structure within a road area shall be shown on all plans. These elevations shall be computed from the established grade and shown in hundredths.

Cut-ins, wye branches, preformed concrete pipe fittings, manholes, brick bends (with or without connections) and Type I Junction Chambers as discussed below are Standard Details. Type II Junction Chambers are Special Details. A Design Figure (General Criteria-Storm Drain Structures) illustrates typical use and limitations of the aforementioned structures as Standard Details. Brick bends which are not in accordance with the limitations indicated on this Design Figure are also Special Structures. Decrease in pipe size at structures will not be permitted for 21" and smaller pipe. For pipes 24" and larger, maximum decrease shall be the next smallest standard size (e.g. 42" to 36").

(a) Cut-ins. Cut-ins shall be permitted for inlet connection pipes where:

15" pipes enter 33" and larger pipe

18" pipes enter 42" and larger pipe

If possible, (spring lines) (center lines) of pipes shall be at the same elevation at junction points.

(b) Wye Structures. Wye structures or manholes (see Standard Details) shall be used as indicated below: where 15" pipes enter 30" and smaller pipes or 18" pipes enter 36" and small pipes.

Upon approval of Department of Public Works, preformed reinforced concrete pipe wye branches may be substituted for wye structures.

(c) Manholes. Manholes shall be used at all changes of pipe size where there is no change in direction. See design figure for limitations of use of manhole for change of direction. Manholes shall be used at all changes of pipe grade of direction. Manholes shall be used at all changes of pipe grade except as discussed under Vertical Curves (this section). Maximum spacing of manholes for drains 27" and smaller shall be 600'.

For sizes 30" and over there shall be no specified spacing of manholes. Design engineers shall indicate manhole stacks on bends and junction chambers only where no other acceptable access is available. Acceptable access shall be a manhole on a 30" or larger drain within 200' of the structure. For 54" and larger bends and junction chambers, frame and cover shall be 30" (See Standard Details).

(d) Bends. Bend Structures. Bend Structures as shown in the Standard Details shall be used to accomplish a change in direction where the downstream pipe is 30" and larger. A design figure (General Criteria-Storm Drain Structures) indicates the limitations placed upon the use of the Brick Bend as a junction structure (e.g. with connection). Manhole stacks shall be required on brick bends as discussed under Manholes (this section). Minimum centerline length of Bends shall be 4 feet. For the short Bends use a Type "C" manhole.

Bends for Box Conduits. Where reinforced concrete box conduits change directions, the bend shall have a centerline radius of two times the inside width of the conduit. Bends shall have 30" frames and covers for maintenance and suitable access.

(e) Junction Chambers.

Type I. Type I Junction Chambers (See Design Figures and Standard Details) shall be used for 48" and smaller pipes where velocities are less than 15 Ft. second and where criteria prohibits the use of a less expensive structure. Manhole stacks shall be required as discussed under manholes.

Special. Special Junction Chambers shall be used where velocities exceed 15 ft./second or largest pipe exceeds 48". They shall be of special design detailed on plans and streamlined to limit head losses.

(f) Long Radius Pipe Curves.

Horizontal. (See Sample Drawing). Horizontal Pipe Curves without manholes shall be permitted for pipes 27" and larger only where approved by the Department of Public Works. The following table lists minimum radius and degree of curvature for 4' and 8' lengths of concrete pipe with maximum joint opening of $\frac{1}{2}$ ". If concrete pipe with mitered joints is used deflection shall be limited to five degrees per joint or less if recommended by manufacturer.

Pipe Size Inches	4' Lengths		8' Lengths	
	Minimum Radius	Degree of Curvature	Minimum Radius	Degree of Curvature
15"	155'	37°38'	310'	18°34'
18"	181'	32°04'	362'	15°53'
21"	207'	27°58'	414'	13°52'
24"	242'	23°50'	484'	11°51'
27"	270'	21°20'	540'	10°38'
30"	298'	19°20'	596'	9°38'
33"	327'	17°35'	654'	8°46'
36"	354'	16°15'	708'	8°06'
42"	411'	13°58'	822'	6°58'
48"	467'	12°18'	934'	6°08'
54"	524'	10°57'	1048'	5°28'
60"	580'	9°54'	1160'	4°56'
66"	636'	9°01'	1272'	4°30'
72"	692'	8°17'	1384'	4°08'

Vertical Curves. (See table above). Vertical Pipe Curves, without manholes shall be permitted for sizes 27" and larger only where approved by the Department of Public Works. Inlet connections may be curves (as prescribed in Table above) for special conditions. In no case shall pipe curves for 24" and smaller pipe be over 50' long.

7. Hydraulic Gradient.

The hydraulic gradient is a line connecting points to which water will rise in manholes and inlets throughout the system during the design flow. The hydraulic gradient shall be determined starting at the downstream end of the proposed drainage system. Where a proposed drainage system is connected to an existing drainage system the hydraulic gradient at the point of junction shall be determined from the hydraulic gradient computations of the existing drain on file at the Department of Public Works. Where the proposed drainage system discharges into a stream, flow conditions of this stream shall be investigated. Where the tailwater elevation is higher than the proposed crown elevation, the hydraulic gradient shall begin at this tailwater elevation. Where free outfall conditions exist the hydraulic gradient shall begin at the crown of the proposed drain. Next, the friction loss (as discussed below) in the drain to the next structure shall be added. The loss in the structure (as discussed under Head Losses in Structures-this section) shall be added. The hydraulic gradient to the upstream end of the proposed drainage system shall be determined by adding a series of friction losses in sections of drains and losses in structures. The hydraulic gradient for the design flows shall not be above an elevation of 1'-6" below the established street grade nor more than 6' over the crown of the pipe. Full consideration shall be given to possible future extensions of the system.

(a) Friction Loss. Head loss due to friction in open channels and pipes with uniform flow shall be determined by the Manning Formula,

$$s = \frac{(nv)^2}{2.2082r^{4/3}} \quad (\text{in which } s = \text{head loss in feet per linear foot of drain})$$

as described under Size of Drains, (this section). For pipe laid on curves, "n" shall be increased by .001 for each 20° of curvature i.e.: n (on curved portion) = n (on tangent) + $\frac{0.287}{R}$ where R = centerline radius of curve.

(b) Head Losses in Structures. Design Figures (Head Losses in Structures) show curves prepared for the determination of head loss in cut-ins, wye branches, preformed concrete pipe fittings, manholes, brick bends (with or without connection and manhole) and Type I Junction Chambers. These curves are based upon surcharged pipes entering rectangular structures but shall apply to monolithic structures as noted below.

These curves are indicated as "A", "B", "C" and "D" losses. The "A" curve depicts loss due to entrance and exit. The "B" curve depicts velocity head. Where the downstream velocity exceeds the upstream velocity, the head loss shall be the difference in velocity heads. Where the upstream velocity is the greater, the apparent gain may be used to offset other head losses in the structure. The "C" curve depicts loss in manhole due to change in direction, loss for wye branch and loss in brick bend. The "D" loss depicts loss due to incoming volume.

These curves shall be applied as discussed below.

Cut-ins. Brick wye branches and preformed concrete pipe fittings. Use full value of "B", "C", and "D" losses.

Manholes. Use full value of "A", "B", "C" and "D" losses for sizes 30" and under. For sizes 33" and larger substitute "C" loss for "A" loss. For inlets used as manholes compute head losses as described for manholes.

Bend Structures. Use full value of "B", "C", and "D" curves. For brick bends with connection or with manhole, increase the "C" loss 50%. For brick bends with both connections and manholes, increase "C" loss 100%.

Junction Chamber (Type I). Use full value of "B" and "C" loss. Use 50% of the indicated "D" loss, increase the "C" loss 50% for junction chambers with manholes.

Monolithic Structures. Use full value of "B" and 50% of indicated "D" loss. Loss due to change of direction in monolithic structures shall be as discussed below for long and short radius bends.

Long Radius bends. Head loss due to change of direction in long radius bends where radius of bend exceeds 20 times pipe diameter shall be allowed for by increasing "n" by .001 for each 20° of curvature.

Short radius bends. (Centerline radius less than 20 times diameter of pipe). Head loss due to change of di-

rection in short radius bends shall be computed by
formula $h_b = K_b \frac{v^2}{2g}$ where

$\frac{v^2}{2g}$ = velocity head ("B" Curve)

K_b = coefficient tabulated below

Coefficient (K_b) for 90° bends		For bends other than 90° Use Percentage of K_b Indicated	
r/D	K_b	Bend	Percent of K_b
1	0.50		
2	0.30	22½°	35%
4	0.25	45°	50%
6	0.30	60°	70%
10	0.35	90°	100%
15	0.40		
20	0.40		

r- centerline radius of bend
D- downstream pipe diameter

C. Example. The example hydraulic gradient computations are based upon the proposed closed conduit shown on the Sample Drawing.

Elevation of
Hydraulic Gradient

i. Existing Junction Chamber
at State Road and Henry Avenue (See
State Road Storm Drain Hydraulic
Gradient Computation)

411.7

ii. Head loss due to friction
in 33" existing Junction Chamber to
MH-1-hf-SL (Length)

$$s = \frac{(nv)^2}{2.2082r} \quad 4/3 \quad Q-43.6v-7.4n-.014$$

$$s = \frac{(.0147 \times 7.4)^2}{2.2082 \times .609} = .0081$$

$$h_f = .0081 \times 23.4 = .189$$

$$\frac{0.2}{411.9}$$

iii. Head losses in MH-1

A - (C Curve) -	0.15
B - 0.86 - 0.75 -	0.11
C -	0.00
D -	0.05

$$\text{Total} = 0.31 \quad \frac{0.3}{412.2}$$

iv. h_f in 33" from MH-1 to PC of horizontal curve

$$s = \frac{(nv)^2}{2.2082r^{4/3}} \quad Q = 40.8, v = 6.9$$

$$n = .014, r^{4/3} = .609$$

$$s = \frac{(.014 \times 6.9)^2}{2.2082 \times .609} = .0069, h_f = .0069 \times 194.6 = 1.33 \quad 1.3$$

v. h in 33' from PC of horizontal curve to fittings @ 4 + 33 n is increased by .0004 as discussed under long radius bends

$$s = \frac{(.0144 \times 6.9)^2}{2.2082 \times .609} = .0074 \quad h_f = .0074 \times 215 = 1.59 \quad \frac{1.6}{415.1}$$

vi. Loss at Fittings @ 4 + 33 and 4 + 37

$$B = 0.75 - 0.61 = 0.14$$

$$C = 2 \times 0.13 = 0.26$$

$$D = \quad = \frac{0.06}{0.46}$$

$$\frac{0.5}{415.6}$$

vii. h in 33" from Fittings to PT of horizontal curve

$$s = \frac{(.0144 \times 5.8)^2}{2.2082 \times .609} = .0059 \quad (h_f = 0.59 \times 192.63 = 1.14) \quad \frac{1.1}{416.7}$$

viii. h in 33" from PT of horizontal curve to PC of Bend Structure.

$$s = \frac{(.014 \times 5.8)^2}{2.2082 \times .609} = .0056 \quad h_f = .0056 \times 29.34 = 0.16 \quad \frac{0.2}{416.9}$$

ix. Head losses in S-1 (Standard Bend Structure with Manhole and Connection)

$$B = 0.60 - 0.81 = -0.21$$

$$C = 2 \times 0.15 = 0.30$$

$$D = \quad = \frac{0.12}{0.21}$$

$$\frac{0.2}{417.1}$$

x. h in 15" from S-1 to MH-2

$$s = \frac{(.014 \times 5.0)^2}{2.2082 \times .213} = .0095 \quad h_f = .0095 \times 234.66 = 2.24 \quad \frac{2.2}{419.3}$$

8. Clearance.

Clearance shall be measured between outsides of pipes. Storm drains crossing water main and sanitary sewers shall be constructed with a minimum clearance of 6".

9. Structural Considerations.

a. Pipe Loading. Minimum and maximum permissible depths shall be in accordance with Design Plates, D-K₁ and D-K₂. Design Plate D-K₂ "Computed Loads on Conduits"¹ gives the dead and live loads² to the top of the conduit for various sizes and depths of pipes.

The theory and assumptions used to compute the information on the three Design Plates are:

1. Marston theory for loads on underground conduits for trench condition.

2. Weight of fill material 110# per cu. ft.

3. Load bedding factor 1.3.

4. Live load H-20 loading without impact.

5. Safety factor. 1.0 for Reinforced Concrete Pipe.

Conduits that are not in a true trench condition require other formulas and the information on the plates cannot be used.

The dead load on a conduit using a different weight of fill material can be found by multiplying the direct proportion of the two weights by the dead load shown on Plate D-5 for the size of pipe and depth of cover under consideration.

b. Pipe Joints. Design engineers shall specify the use of special joints where leakage from joints is likely to cause washing out of road foundations. Special joints shall be required in all cases where soil is sandy (generally the area south of Eastern Avenue).

c. Reinforced Concrete Box Drains. Reinforced concrete box drain structural design shall be in accordance with structural design of culverts as discussed in the Structural Design Section.

d. Special Structures. Allowable stresses and method of considering loads for special structures (junction chambers, etc.) shall generally be in accordance with structural design of culverts as discussed in Structural Design Section.

e. Foundations. In all cases, proper foundations shall be provided for drains. Design engineers shall detail in contract drawings methods acceptable to the Department of Public Works for supporting drains on unstable ground or fresh fill.

f. Underdrains. Underdrains shall be VCPX, CSPX perforated BCCMP, or pipes of equal strength, and need not be shown on the contract drawings.

C. Improved Open Channels.

1. Location and Alignment.

Open Channels shall be so located as to change the stream alignment as little as possible. However, it shall

generally be considered desirable to eliminate bends, to cross streets (and future streets) normal to the street and to eliminate stream channels running through the center of a property where location near or on a property line is feasible.

2. Quantity of Runoff.

The quantity of runoff for areas 500 acres or smaller shall be determined as described for closed conduit systems. For areas larger than 500 acres, runoff shall be determined as described in the Bridges and Culverts Section.

3. Size of Channel.

(a) Shape. Improved Open Channels shall have sides slopes of 5 horizontal (minimum) to 1 vertical with no flat bottom (See Section 1, Open Channels of the Standard Details Plate 41). Where velocities exceed those permissible for earth, channels shall be paved as shown in Section 2. Section 3 illustrates the channel section which shall be used, upon approval of the Department of Public Works, where:

(1) An existing narrow right of way does not permit use of Sections 1 or 2.

(2) Dry weather flow would cover bottom of Section 3.

(b) Required Waterway Area. The waterway area required shall be determined from the relationship:

$$Q = av \text{ and Mannings Formula, } v = \frac{1.486}{n} r^{2/3} s^{1/2}$$

as discussed in Closed Conduit Systems. Maximum waterway depth for all channels shall be 5'. Greater depths must be approved by the Department of Public Works. Following is a list of "n" values encountered in design of open channels. These values can also be used for flow in gutter, swales and ditches. Also listed are maximum permissible velocities for these materials. Maximum velocities shall be based upon design flow quantities.

(c) Freeboard.

(1) Hydraulic Jump. Where the depth of design flow is slightly below critical depth, channels shall have freeboard adequate to cope with the effect of hydraulic jump.

(2) Silt Deposits. Open Channels shall have one foot of freeboard to accommodate silting. Where no appreciable silt deposits will occur, this one foot freeboard may, upon approval of the Department of Public Works, be eliminated.

CRITERIA FOR DESIGN OF IMPROVED OPEN CHANNEL CONSTRUCTION

Material	*Manning "n"	Required Thickness	Maximum Velocity ft/sec.
Concrete, trowel finish	.013	5"	20
		3"	12

CRITERIA (Cont'd)

LIBER

2 PAGE 221

Material	*Manning "n"	Required Thickness	Maximum Velocity ft/sec.
Smooth concrete, wood float finish	.015	5"	20
Bituminous concrete	.015	3" 5"	12 16
Macadam	.016	3" 5"	10 18
Precast concrete section	.017	3" 5"	12 18
Gunitite, wavy	.020	3" 5"	12 14
Grouted Riprap	.025	3" 12" 6"	9 20 12
Earth (New)			
Uniform, firm, sodded, clay	0.25	--	8
Uniform, firm, sodded, clay & sand mixed	.025	--	6
Uniform, firm, clay with seeded topsoil (y)	.025	--	6
Uniform, firm, sodded, sandy earth	.025	--	4
Uniform, firm, mixed clay and sand with seeded topsoil (y)	.025	--	4.5
Uniform, sandy, earth, with seeded topsoil (y)	.025	--	3
Other Open Channels			
Earth (existing)			
Fairly uniform with some weeds	.030	--	--
Dense growth of weeds depth of flow materially greater than weed height	.035	--	--
Dragline excavated with dense weeds and brush	.040	--	--
Swales (grass)	.035	--	--

Notes:

(y) = special permission of the Department of Public Works required where improved open channels are constructed without sod or pavement.

* = "n" shall be increased by .001 for each 20° curvature.

(d) Maximum Velocity. Maximum velocities shall be as shown in Table above. Paved, stepped sections shall be used to limit velocities wherever feasible.

Design Engineers shall determine the effect of hydraulic jump where velocities in paved channels exceed critical velocity.

4. Materials.

Improved open channels shall be constructed of the materials listed above providing that the Department of Public Works has approved the use of such materials and that the use of these materials is in accordance with other criteria stated herein.

(a) Paved Channels. Pavement for straight sections of channels shall be as shown in the Standard Details Open Channels.

Where the centerline radius of bends is less than 60' paved side slope protection shall be detailed on the contract drawings.

On curves, paved channels shall be superelevated as required for a two year storm. On sharp curves, consideration shall be given to a steeper slope on the outside bank and additional depth of pavement.

(b) Earth Channels. Standard Details, Open Channels shows required limits of sod and seeding for channels.

III. CONTRACT DRAWINGS AND DOCUMENTS TO BE SUBMITTED TO THE DEPARTMENT OF PUBLIC WORKS.

Attention is called to General Instructions Section for additional information.

A. Preliminary Reports.

Preliminary Reports shall be submitted as stipulated in the General Instructions Section. Reports shall include a map (1" = 200') of the entire drainage area showing the proposed storm drains in conjunction with existing drains. Also included shall be a flow tabulation and a preliminary estimate of project costs.

B. Contract Drawings.

Storm Drain contract drawings shall be prepared separate from other utilities. The drawing numbers of plans of other utilities being prepared at the same time shall be shown. Manhole numbers, job orders, and contract numbers shall be obtained from the Department of Public Works. The Sample Drawing illustrates these applications.

All applicable items shown on the Check List shall be clearly shown on the Contract Drawings and one copy of the Check List shall be submitted along with the Final Contract Drawings.

1. Plan

The plan shall be shown at the upper left of the drawing, north pointing toward the top or left side of the sheet.

(a) Scale. Scale shall be 1" = 50'.

(b) Method of indicating location. Generally,

drains, inlets and manholes shall be located in plan by dimensions from property markers or other well defined physical features. Curb radii shall be shown for inlet location purposes. However, in areas where physical features are not available, coordinates of manholes and bearings of storm drains based on the Harford County Coordinate System shall be used.

2. Profile.

The profile shall be shown under the plan.

(a) Scale of drain profile and inlet profiles shall be 1" = 50' horizontal, 1" = 5' vertical. Drain profiles on straight streets shall be shown to correct scale. On curved streets horizontal distances between structures shall be plotted using length of street centerline between radial projections to structures. The true length between structures shall be shown by figures.

(b) Street Grades. Approved established grade shall be obtained from the Department of Public Works. When such grades are not available, they shall be established by the design engineer and submitted to the Department of Public Works, for approval.

The established grade shall be top of curb, where available, or centerline.

Where drain is located in present or proposed pavement or shoulders the existing centerline grade of road shall be shown. Where drain is outside pavement or shoulders, existing ground over drain shall be shown. If the drain is to be constructed on fill, profile of the undisturbed earth (at drain location) shall be shown.

(c) Hydraulic Gradient. A hydraulic gradient shall be shown for storm drains and open channels.

3. Other Utilities.

Other existing and proposed utilities shall be accurately and clearly shown in plan and profile according to the Standard Symbols in the General Instructions Section.

4. Location and Design Information.

A Drainage Area Map shall be shown on first drawing of the Contract Drawings indicating the entire drainage area to be served both presently and ultimately by the proposed drains, scale 1" = 200' except when space does not permit without extra drawing, then 1" = 500'. Where the drainage area map will not show at least two well known streets or routes a Location Map shall be added (1" = 2000') showing the location of the work. Design Data, Bench Marks, based on Harford County Coordinate System, manhole and inlets schedules shall be shown on the Sample Drawing and as listed in the Check List.

5. Special Details. Structures or details not included in the Standard Details shall be clearly detailed on the contract drawings. See General Instructions Section for scale.

C. Estimate of Quantities.

The Engineer shall submit an estimate of quantities

for each contract, including contingent items as set forth in the General Instructions Section.

D. Design Calculations.

Design Engineers shall submit design data and computations for the project as specified in the General Instructions Section. The data shall be comprised of generally the following items. This data shall be submitted at the same time the Contract Drawings are submitted for review.

1. Hydraulic Design.

(a) Flow tabulation form.

(b) Calculation of sizes and hydraulic gradient.

2. Structural Design.

(a) Drains. Structural calculations for all drains other than pipes shown in loading tables shall be submitted.

(b) Special Structures. Design computations for all special structures shall be submitted.

3. Coordinates.

Computations of coordinates shall be submitted where coordinates are shown on contract drawings.

4. Results of Borings and Test Pits.

Where information pertinent to design, such as borings, has been collected, this information shall be submitted to the Department of Public Works.

HARFORD COUNTY BUREAU OF ENGINEERING STORM DRAIN FLOW TABULATION FORM

LOCATION HENRY AVENUE AND STATE ROAD

DEVELOPMENT WESTWOOD HEIGHTS SECTION 1

Made in connection with J.O. No: 4-102-2
STORM FREQUENCY 10 year, except as noted

Date 19
Sheet 1 Total in Comp. 2
Computed by
Checked by

LOCATION		AREA	ACRES		COEFF "C"	CA	ΣCA	TIME CONC. MIN.		INTEN. "1"	Q = CIA C.F.S.	PIPE n = 0.014			REMARKS		
From	To		Sub.	Total				Inlet	Drain	Total		Size	Slope	Vel.	Lgth.		
I-10	M-7	A	3.4		0.38	1.29		8.8			6.3	8.13	15"	1.8%	6.4	42	A-1
I-11	M-7	B	0.9		0.38	0.34		9.6			6.2	2.11	15"	0.1%	1.9	65	A-1
I-9	M-7	C	1.5		0.38	0.57		10			6.1	3.48	15"	0.3%	2.7	70	S-COMB. LBER
M-7	M-5	A-C		5.8			2.20	10	0.7	10.7	6.0	13.20	21"	0.8%	5.4	410	
I-8	M-5	D	3.0			0.42	1.26	9.3			7.1	8.95	18"	0.8%	5.0	20	A-1
M-5	1-7	A-D		8.8			3.46	10.7	1.27	11.97	6.6	22.90	24"	1.1%	7.1	20	
1-7		E	2.8			0.42	1.18	8.3			7.3	8.61					A-1
1-7	S-1	A-E		11.6			4.64	11.97		12.0	6.6	30.10	27"	1.1%	7.5	280	
1-7	S-1	A-E	#	12.93	0.40		5.19	12.0		12.0	5.8	30.10	27"	1.1%	7.5	280	DRAINAGE AREA ADJUSTED *
1-5	M-4	F	2.3			0.42	0.97	9.4			6.3	6.11	15"	0.9%	4.9	30	DBL E-COMB
I-6	M-4	G	2.4			0.43	1.01	10			6.1	6.18	15"	1.0%	4.9	30	DBL E-COMB
M-4	S-1	F-G		4.7			1.98	10	0.1	10.1	6.1	12.10	18"	1.5%	6.7	235	
S-1	tee Fitting	A-G		17.63			7.17	12.0	0.6	12.6	5.7	40.87	30"	1.1%	8.2	223	
1-3	tee Fitting	H	1.5			0.42	0.63	10.0			6.1	6.3	15"	1.1%	5.1	22	DBL E-COMB

* Areas increased to produce 20 yr. runoff quantity for 10 yr. frequency storm. See page D-2 for further explanation.
+ 20 year design storm.

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
APPROVED D. G. [Signature]
DIRECTOR
BUREAU OF ENGINEERING
DATE 4/16/66

STANDARD STORM DRAINAGE DESIGN

FLOW TABULATION FORM

LOCATION	HENRY AVENUE AND FREE ROAD
DEVELOPMENT	WESTWOOD HEIGHTS SECTION I

Date 19
 Sheet 2 Total in Comp. 2
 Computed by
 Checked by

Made in connection with JO. No. 4-102-2
STORM FREQUENCY 10 yr. except as noted

[illegible]

NOTE: This tabulation is based upon sample dwg. Figure D-A

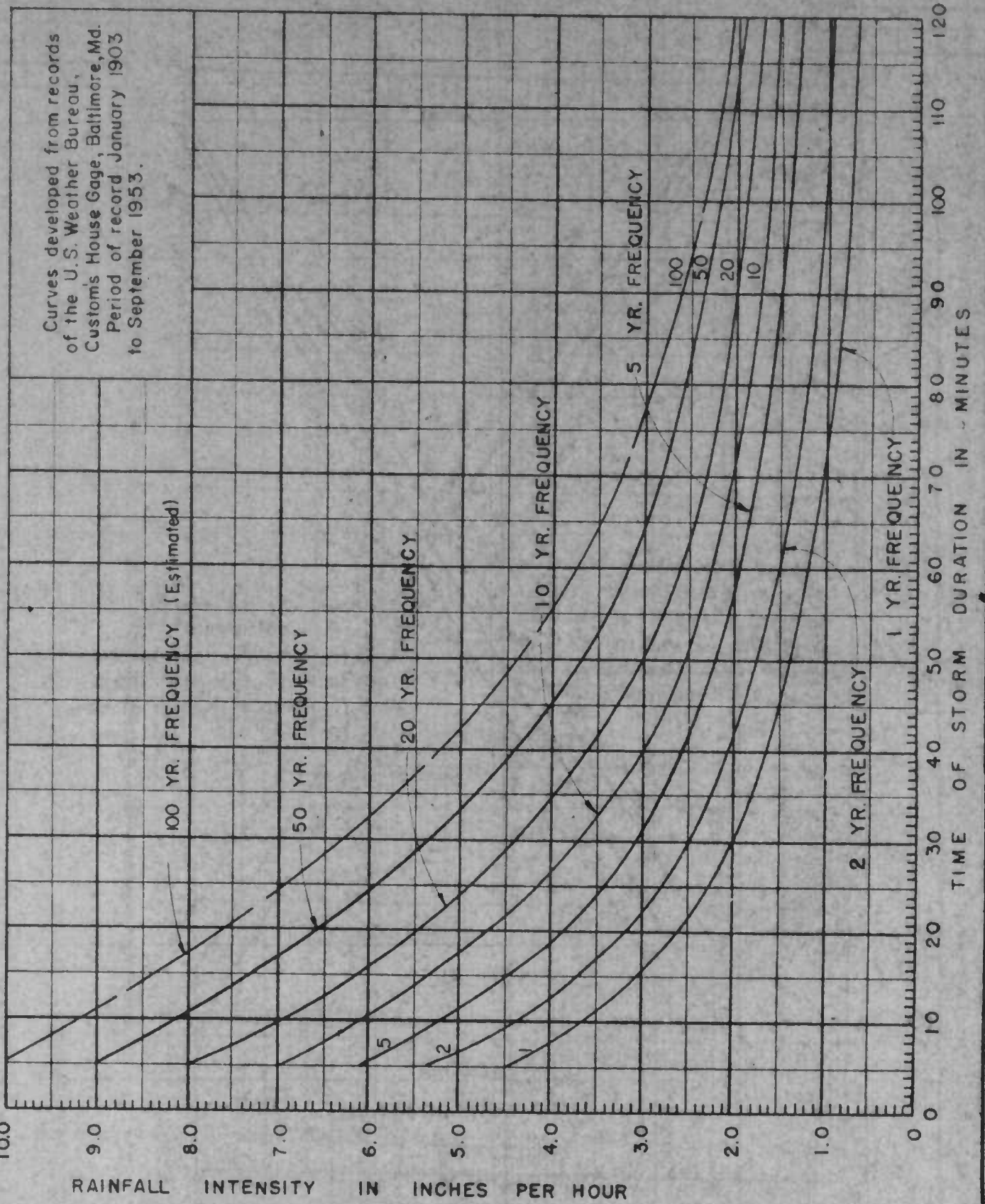
[illegible]

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>D. J. [Signature]</i> DIRECTOR <i>Harold K. [Signature]</i> BUREAU OF ENGINEERING	DATE
		11/1/66

STANDARD STORM DRAINAGE DESIGN

FLOW TABULATION FORM

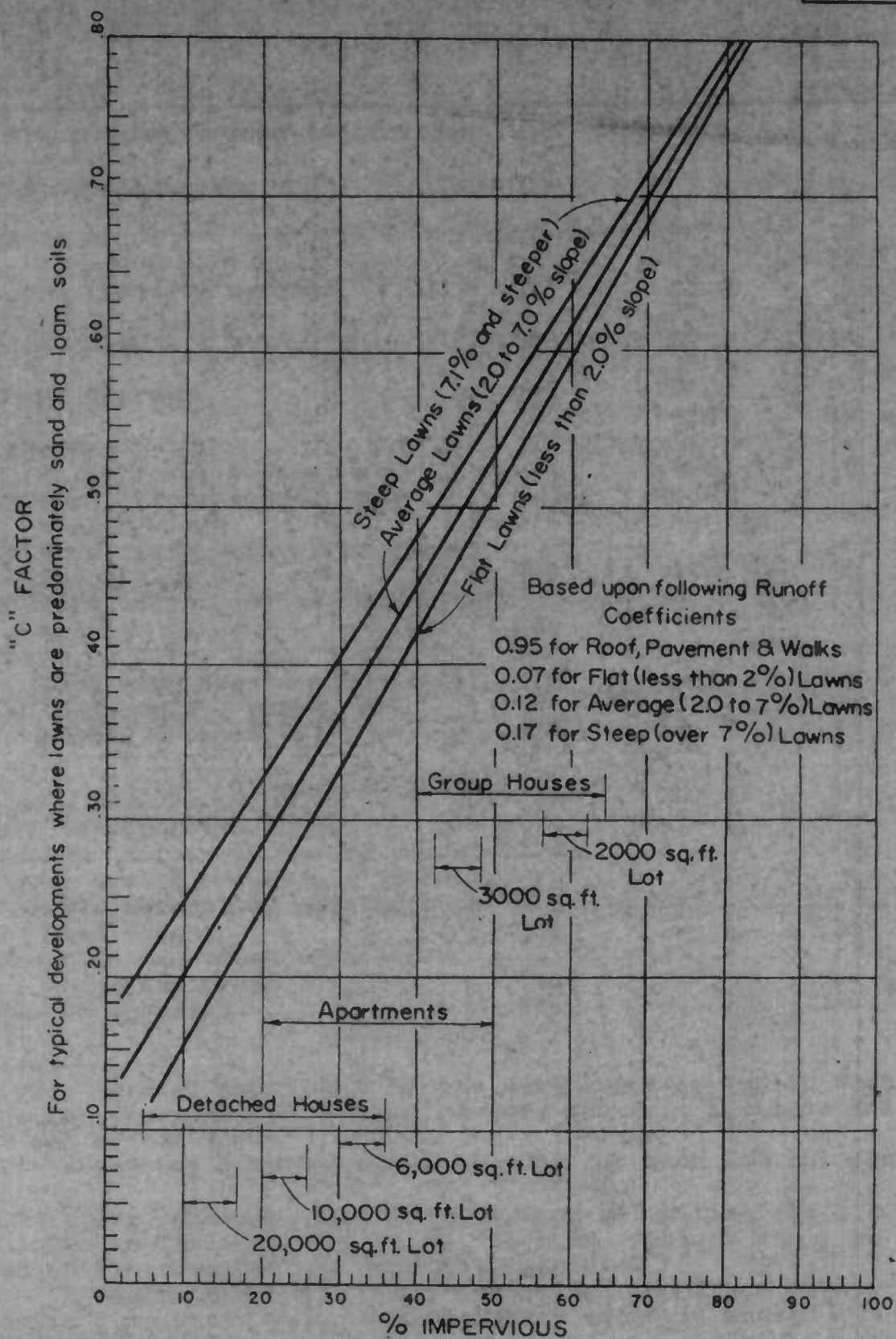
D-12



HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>R. G. Lippert</i> DIRECTOR	REVISED	STANDARD STORM DRAINAGE DESIGN RAINFALL INTENSITY BALTIMORE & VICINITY	D-A
	<i>Arnold J. Hamilton</i> DIVISION OF ENGINEERING 11/1/66			

REVISION

DATE BY



HARFORD
COUNTY
DEPARTMENT
OF
PUBLICWORKS

APPROVED
G. J. Barry
DIRECTOR
Harold R. Hamilton
DIVISION OF ENGINEERING
11/1/66 DATE

REVIEWED

STANDARD STORM DRAINAGE DESIGN

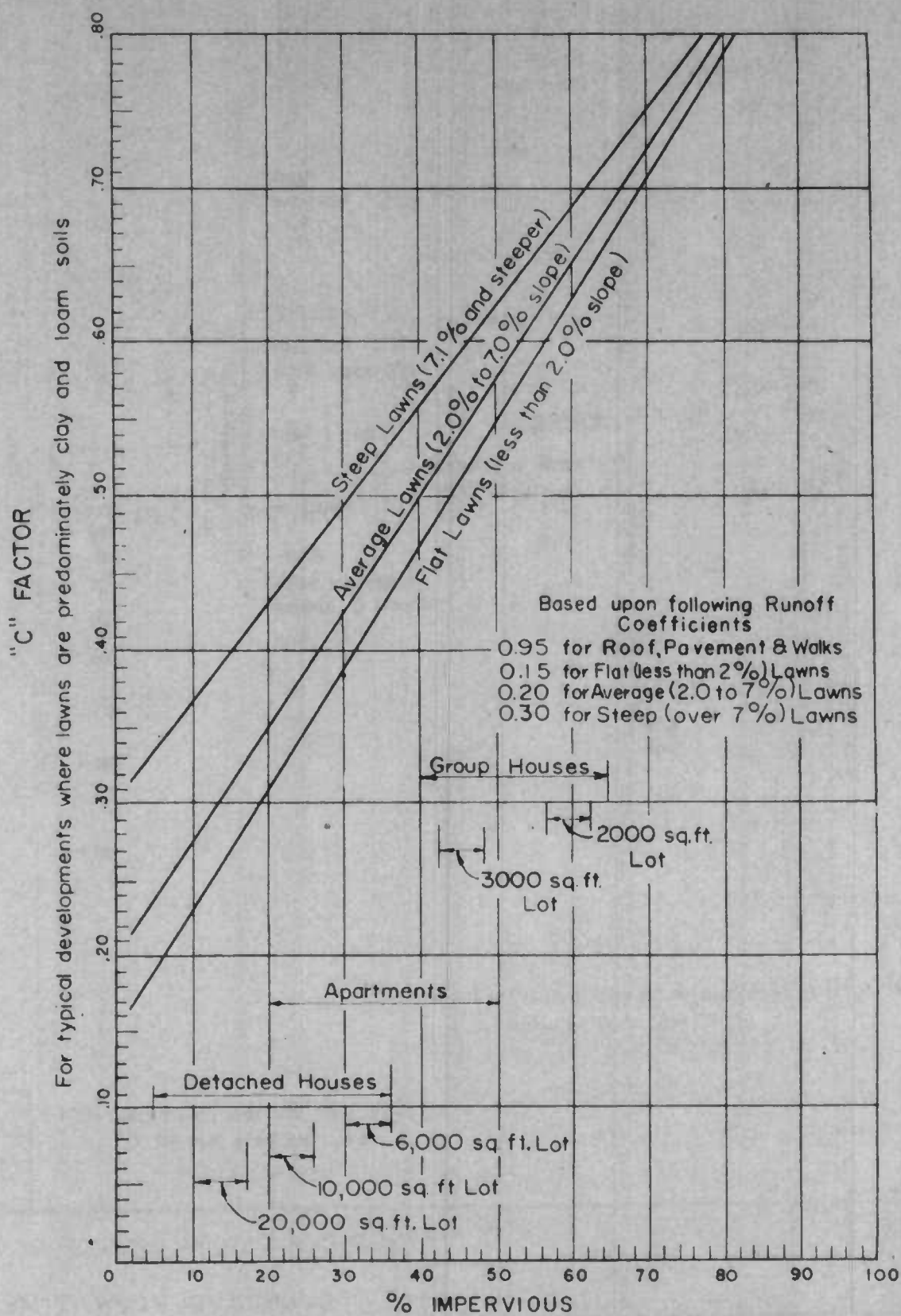
"C" FACTORS FOR TYPICAL
DEVELOPMENTS - SANDY SOILS

D-12

REVISED

DATE

BY



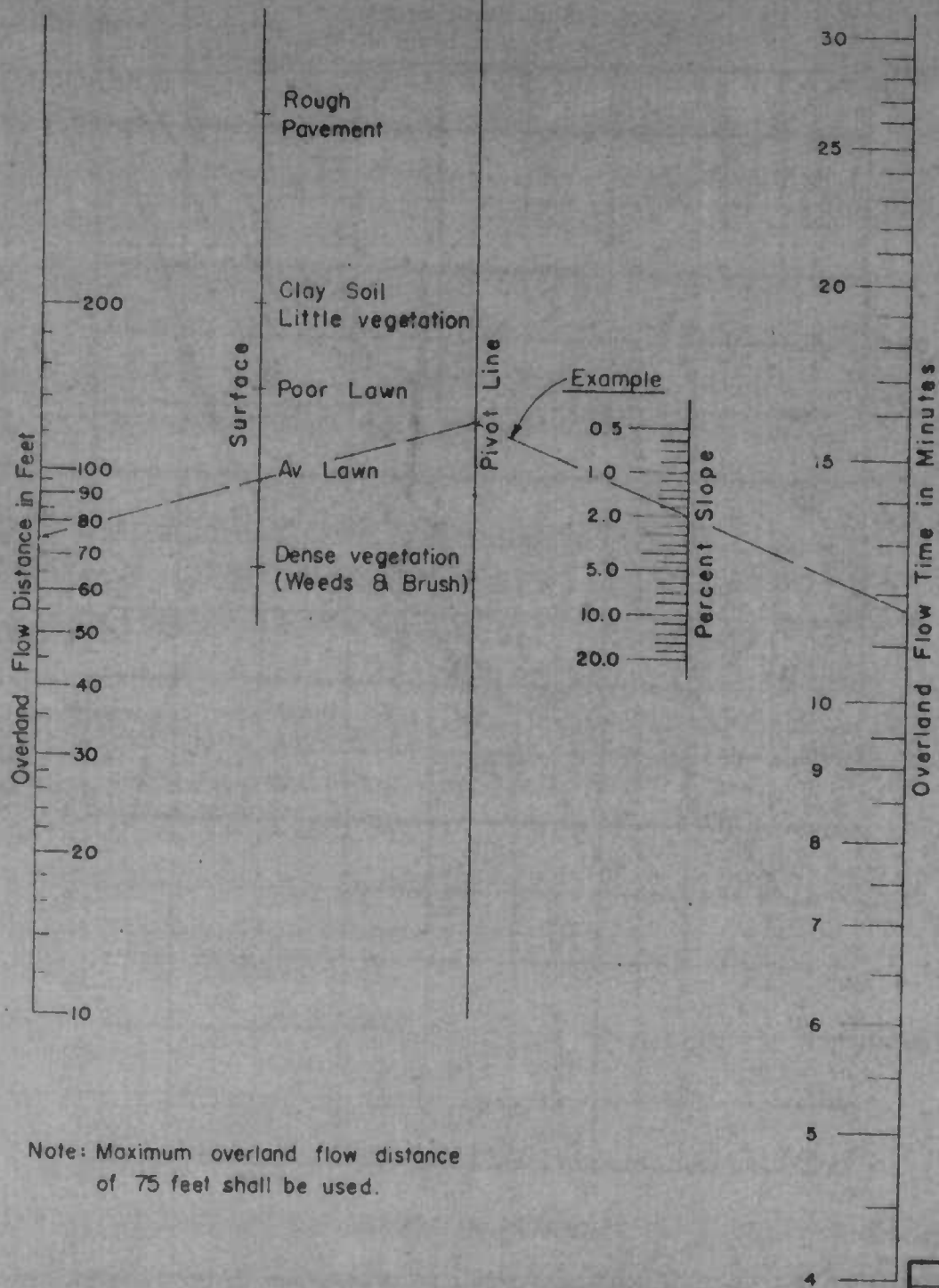
HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

P. J. A. [Signature]
Harold J. Hamilton
11/1/66

REVIEWED

STANDARD STORM DRAINAGE DESIGN

"C" FACTORS FOR TYPICAL
DEVELOPMENTS-CLAY SOILS

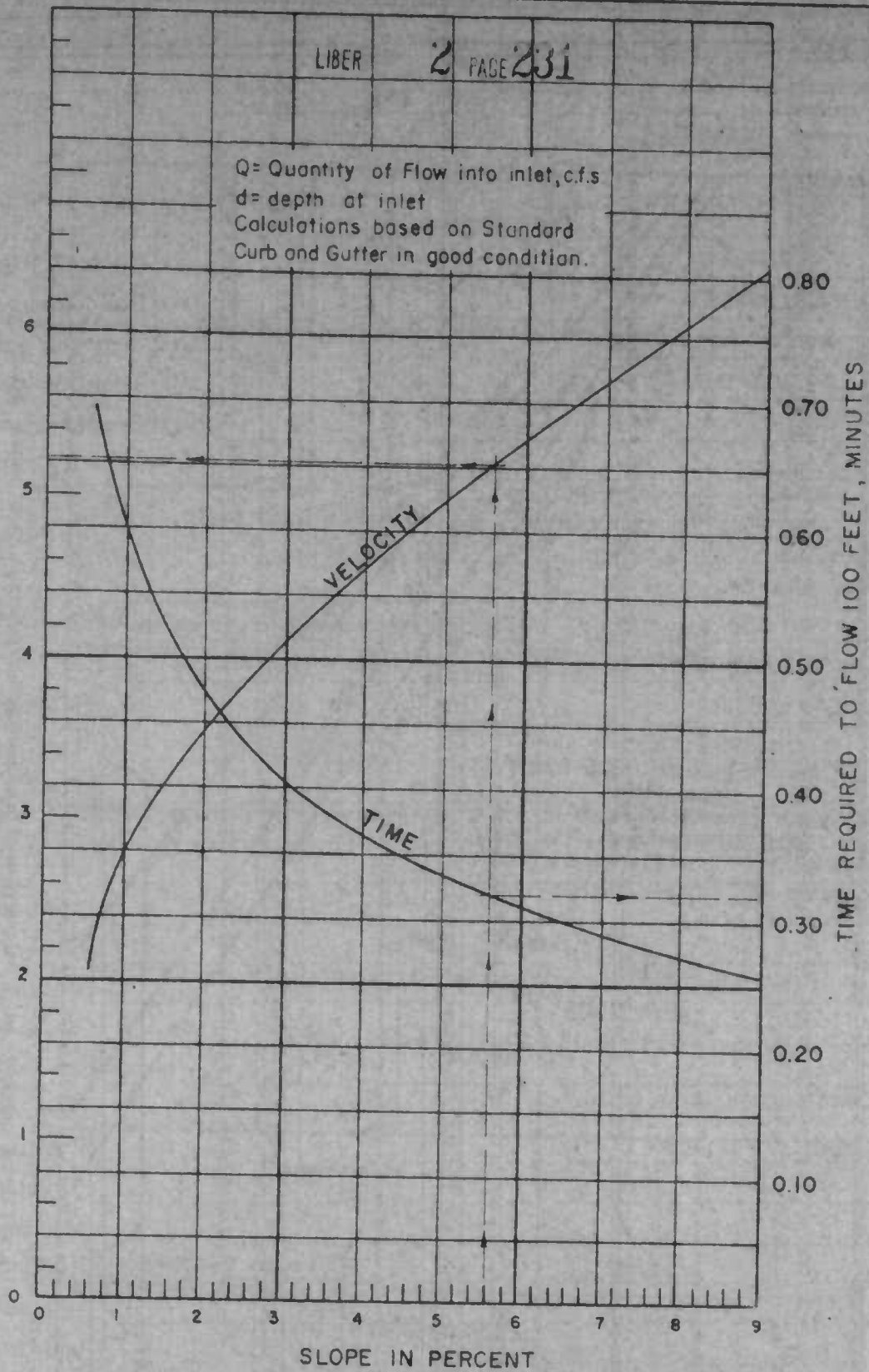


Note: Maximum overland flow distance of 75 feet shall be used.

REVISED	
DATE	BY

HARTFORD COUNTY DEPARTMENT OF ENGINEERING	APPROVED <i>R. J. Higgins</i> <i>Harold J. Hamilton</i> 1/1/66	REVIEWED	STANDARD STORM DRAINAGE DESIGN	
			OVERLAND FLOW TIME	

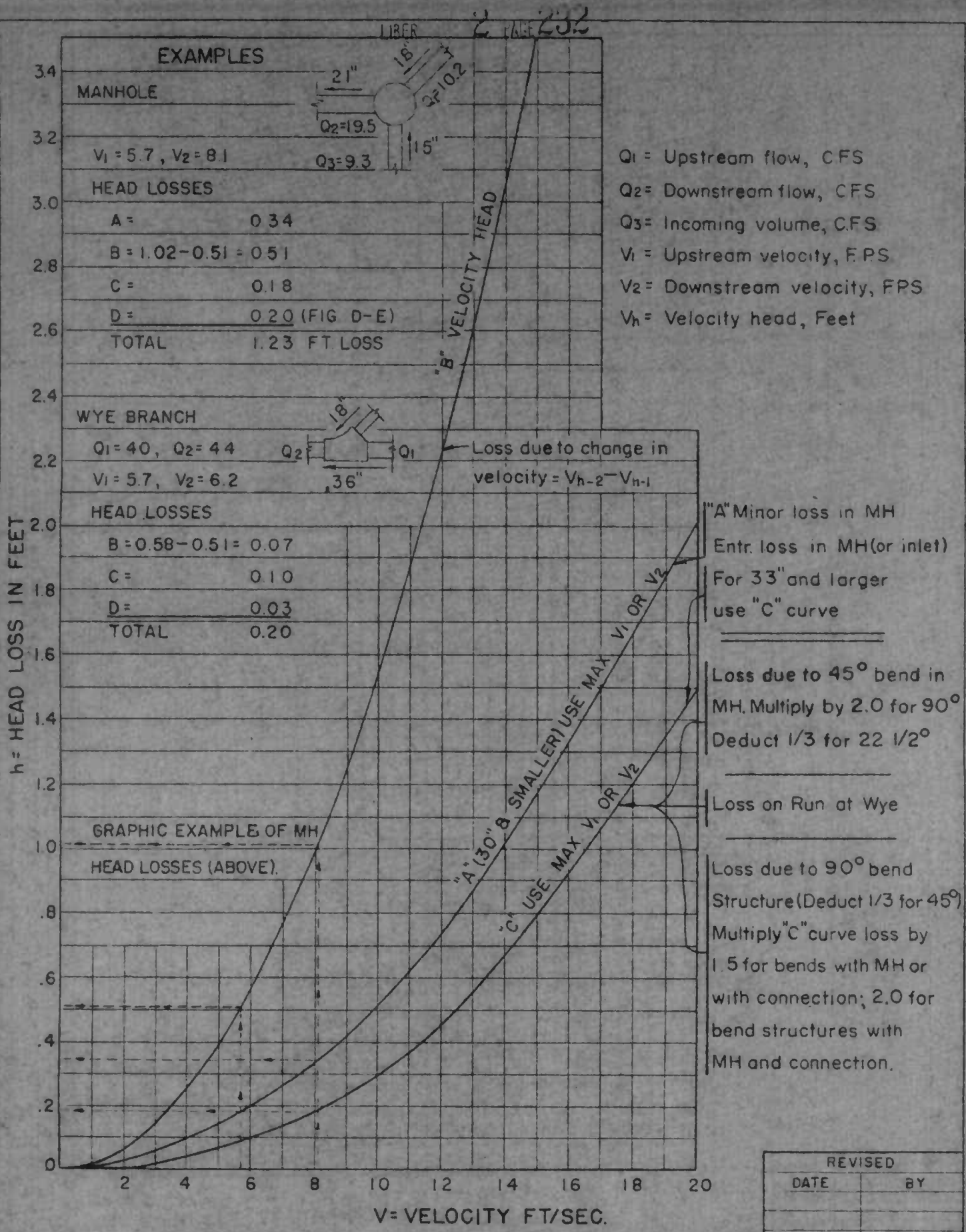
AVERAGE VELOCITY OF FLOW (FEET PER SECOND)
FROM POINT WHERE FLOW ENTERS GUTTER TO POINT WHERE FLOW
ENTERS INLET



Example Given Slope = 5.6%, Distance (beginning of gutter flow to inlet) = 305'
Determine Average velocity and time of gutter flow.
Solution Average velocity = 5.22 f.p.s. Time = $3.05 \times .32 = 0.98$ minutes

REVISED	
DATE	BY

APPROVED <i>R. G. Foyyk</i> <i>R. G. Foyyk</i> 11/1/66	REVIEWED	STANDARD STORM DRAINAGE DESIGN GUTTER FLOW VELOCITY & TIME



Q₁ = Upstream flow, CFS
 Q₂ = Downstream flow, CFS
 Q₃ = Incoming volume, CFS
 V₁ = Upstream velocity, FPS
 V₂ = Downstream velocity, FPS
 V_h = Velocity head, Feet

"A" Minor loss in MH
 Entr. loss in MH (or inlet)
 For 33" and larger use "C" curve

Loss due to 45° bend in MH. Multiply by 2.0 for 90°
 Deduct 1/3 for 22 1/2°

Loss on Run at Wye

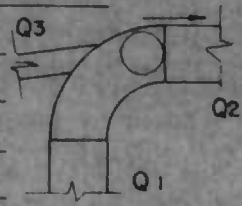
Loss due to 90° bend Structure (Deduct 1/3 for 45°)
 Multiply "C" curve loss by 1.5 for bends with MH or with connection; 2.0 for bend structures with MH and connection.

HARTFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED	REVIEWED	STANDARD STORM DRAINAGE DESIGN HEAD LOSSES IN STRUCTURES "A", "B" & "C" LOSSES
	<i>[Signature]</i>		
	<i>[Signature]</i>		
	<i>[Signature]</i>		

EXAMPLES (Also See Figure-D D)

BEND STRUCTURE WITH MANHOLE AND CONNECTION

$Q_1 = 150, Q_2 = 180, Q_3 = 30$
 $V_1 = 11.9, V_2 = 14.1$
HEAD LOSSES
 $B = 3.30 - 2.20 = 1.10$
 $C = 2.0 \times 0.69 = 1.38$
 $D = 0.35$
TOTAL 2.83 FT. HEAD LOSS

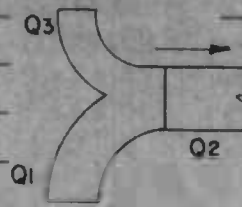


$\frac{Q_3}{Q_1} = 100\%$

Use full head loss indicated for Manholes, Wye Branches, and Bends. Use 1/2 indicated head loss for Junction Chambers.

TYPICAL JUNCTION CHAMBER

$Q_1 = 130, Q_2 = 195, Q_3 = 65$
 $V_1 = 13.5, V_2 = 12.3$
HEAD LOSSES
 $B = 2.35 - 2.85 = -0.50$
 $C = 0.60$
 $D = 0.50 \times 0.94 = 0.47$
TOTAL 0.57 FT. HEAD LOSS

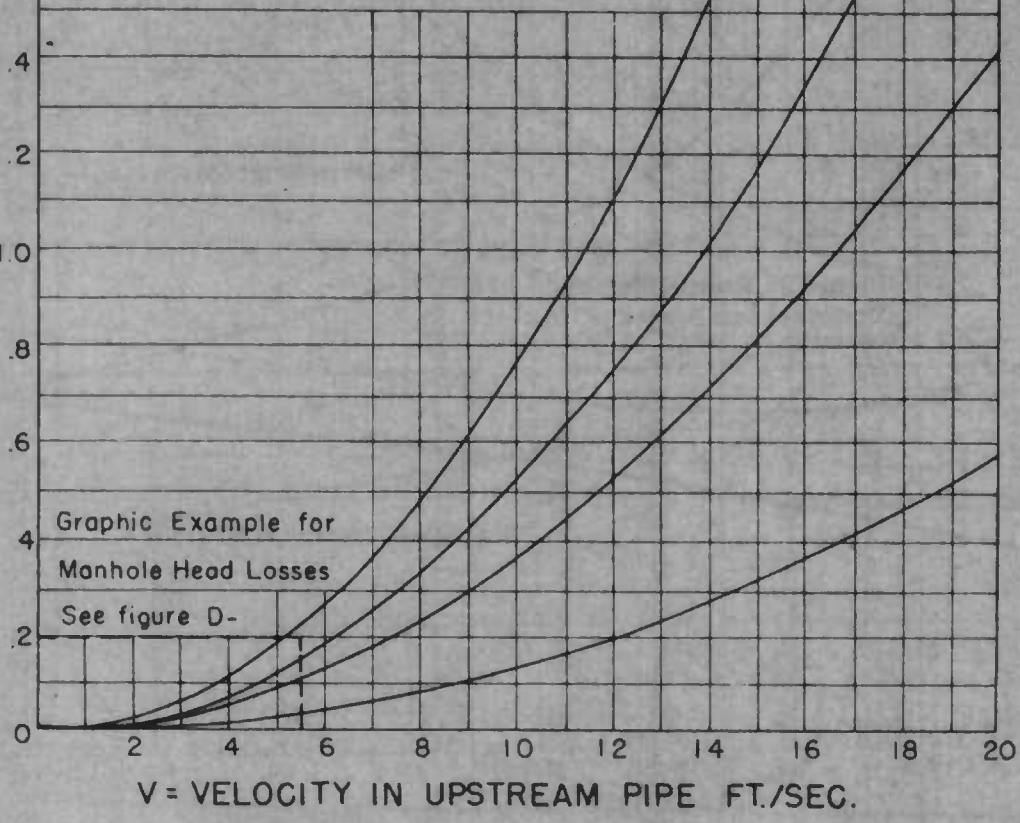


$\frac{Q_3}{Q_1} = 50\%$

$\frac{Q_3}{Q_1} = 30\%$

$\frac{Q_3}{Q_1} = 10\%$

h = HEAD LOSS IN FEET



Graphic Example for Manhole Head Losses
See figure D-

V = VELOCITY IN UPSTREAM PIPE FT./SEC.

REVISED	
DATE	BY

APPROVE
[Signature]
1/1/66

REVIEWED

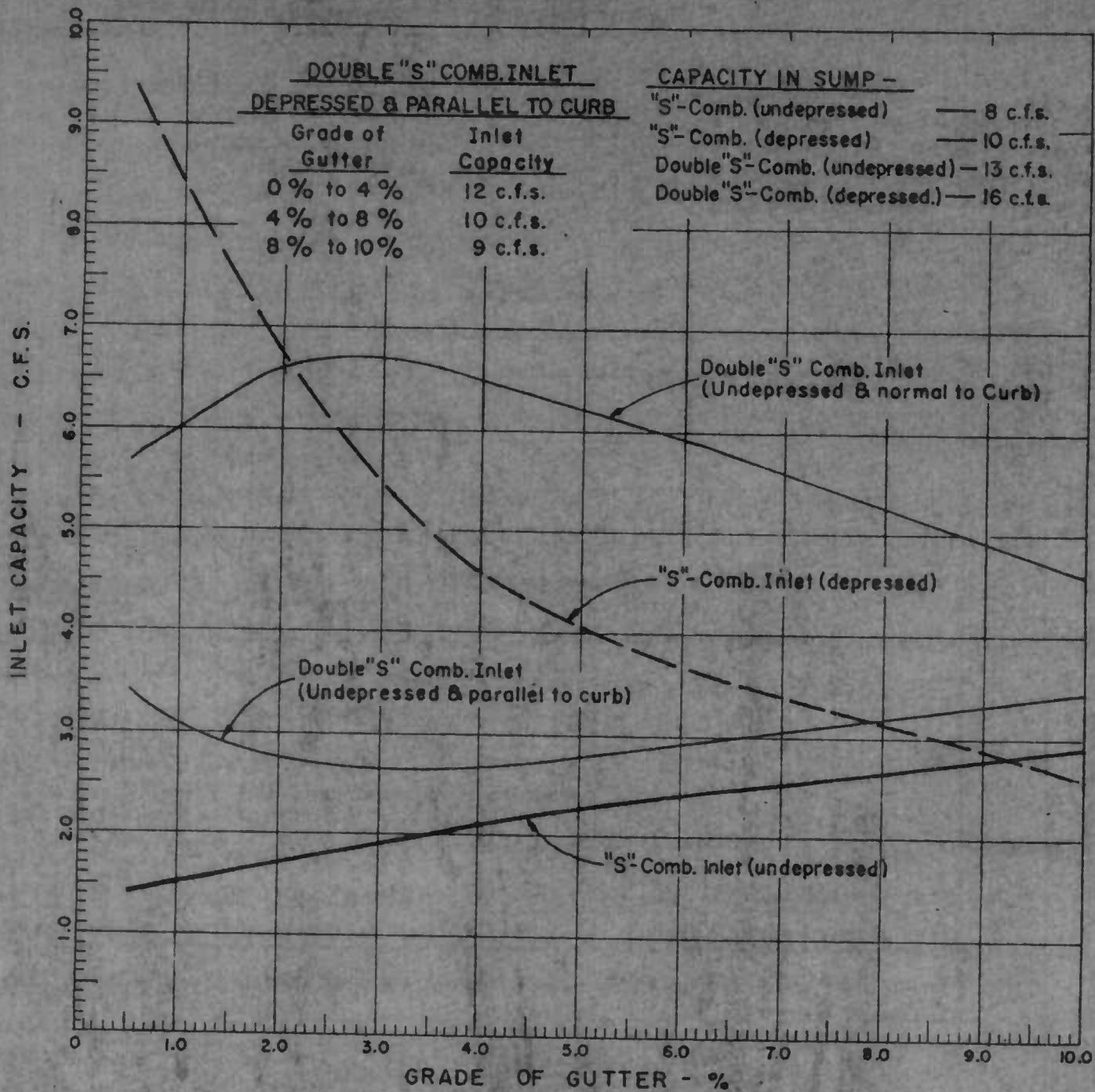
STANDARD STORM DRAINAGE DESIGN
HEAD LOSSES IN STRUCTURES
"D" LOSS

Curves based on data from 1952-1953 Report of "Storm Water Research Committee," Johns Hopkins University, Institute of Cooperative Research.

Curves below are for Inlets shown in Standard Details.

Inlet capacities have been reduced for the estimated effect of debris partially clogging the inlet, by 20% (On Slopes).

Capacities based on Standard 7 $\frac{1}{2}$ " Curb & Gutter and 1 to 18 Average Crown Slope for a distance of approximately 5' from face of curb.



HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>C. G. [Signature]</i> DIRECTOR	REVIEWED	STANDARD STORM DRAINAGE DESIGN	
	<i>Harold J. [Signature]</i> CHIEF ENGINEER		INLET CAPACITY CURVES	
			"S"-COMB. INLETS	
				DH

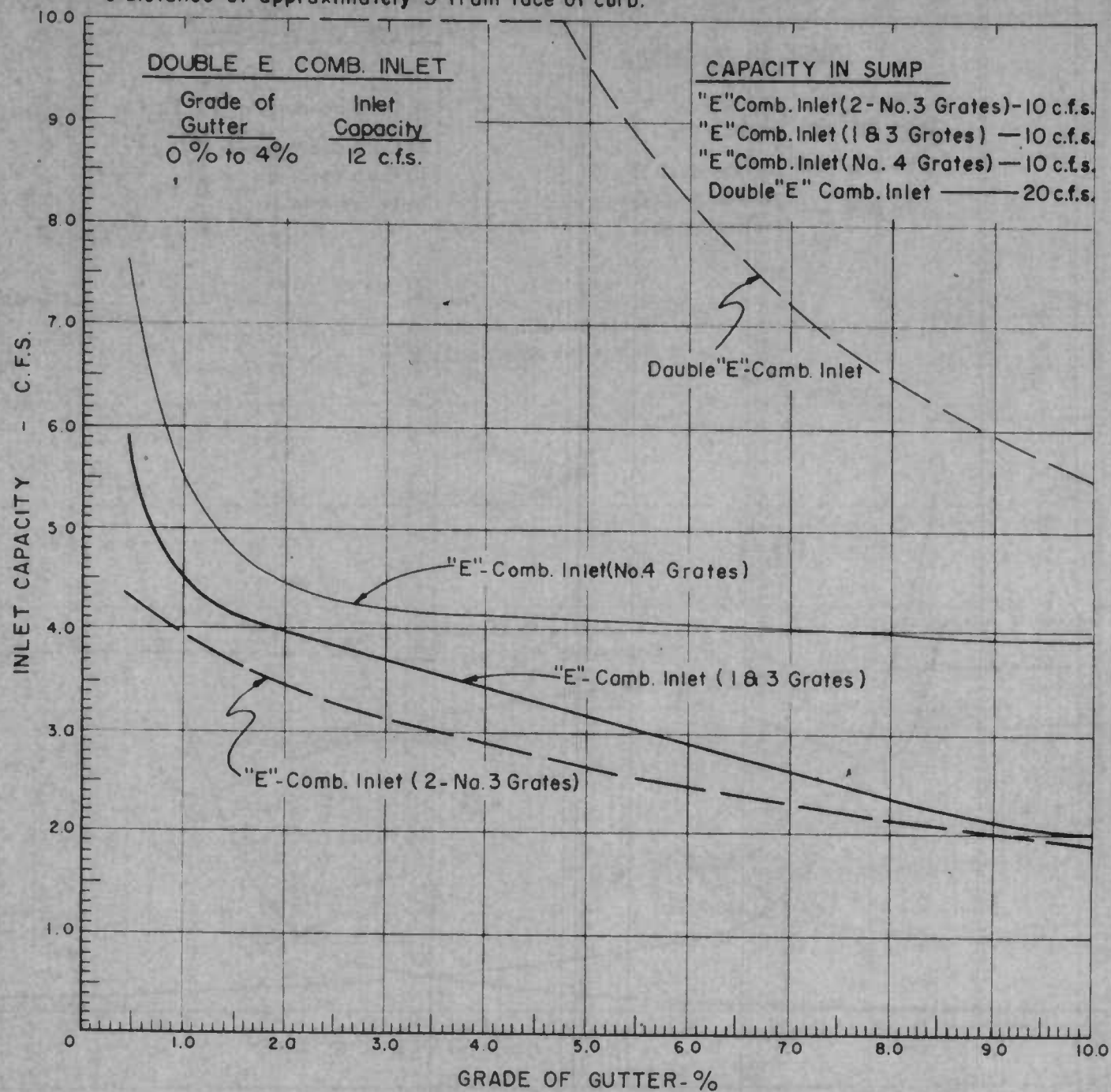
Curves based on data from 1952-1953 Report of "Storm Water Research Committee", Johns Hopkins University, Institute of Cooperative Research.

Curves shown are for standard depressed inlets used locally in Baltimore City, Baltimore County & Vicinity.

Inlet capacities have been reduced for the estimated effect of debris partially clogging the inlet, by 20% (On Slopes).

Capacities based on Standard $7\frac{3}{16}$ " Curb & Gutter and 1 to 18 Average Crown Slope for a distance of approximately 5' from face of curb.

REVISED	
DATE	BY



MADE BY C. J. Dwyer	APPROVED BY Harold J. Hamilton	REVIEWED	STANDARD STORM DRAINAGE DESIGN INLET CAPACITY CURVES "E" COMB. INLETS	1
DATE 1/1/66	DATE	DATE	DATE	DATE

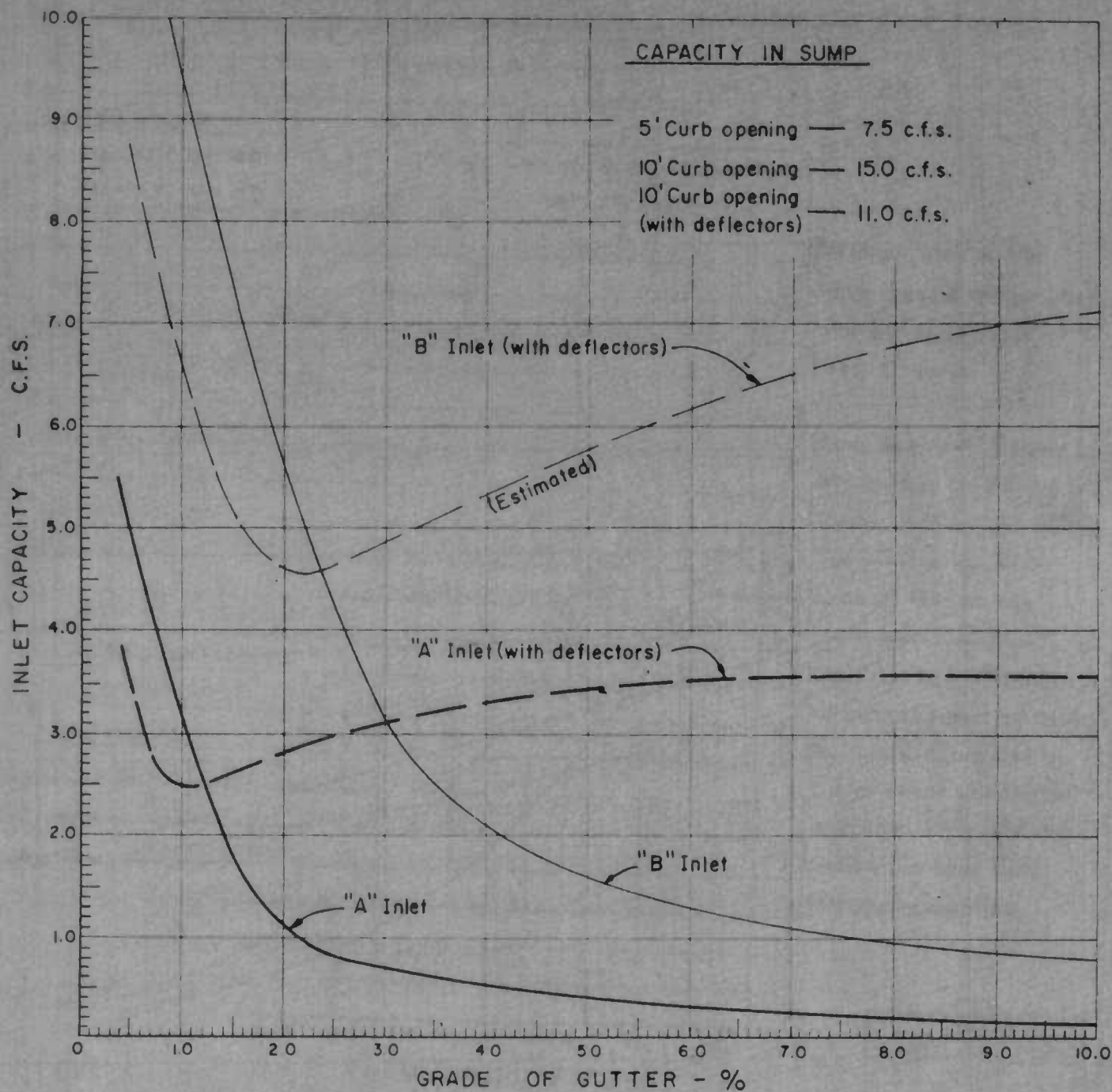
Curves based on data from 1952-1953 Report of "Storm Water Research Committee", Johns Hopkins University, Institute of Cooperative Research.
Curves shown are for standard inlets used locally in Baltimore City, Baltimore County & Vicinity.

Inlet capacities have been reduced for the estimated effect of debris partially clogging the inlet, by 10% (On Slopes).

Capacities based on Standard $7\frac{1}{8}$ " Curb & Gutter and 1 to 18 Average Crown Slope for a distance of approximately 5' from face of curb.

REVISED

DATE BY



DESIGNED BY
CHECKED BY

Handwritten signatures and dates:
2.9.66
11.66

REVIEWED

STANDARD STORM DRAINAGE DESIGN

INLET CAPACITY CURVES

"A" & "B" INLETS

STORM DRAIN CONTRACT DRAWINGS

LOCATION _____

DATE _____

CHECKED BY _____

(P)- Pencil (I)- Ink

PLAN

A. Supplementary Information.

1. . . . Property-all lines shown in proper symbols (I)
2. . . . Property-lot numbers and front dimensions (Front only) (I)
3. . . . Property-new and existing R/Ws shown and dimensioned (I)
4. . . . Roads and streets - all shown in proper symbol (I)
5. . . . Roads and streets-names and alignment with R/W and pavement widths shown (I)
6. . . . Road and streets-existing and/or proposed pavement labeled (I)
7. . . . Roads and streets-existing and/or proposed curb line- labelled if existing or proposed (I)
8. . . . Roads and streets-curb radii indicated (I)
9. . . . Roads and streets-State Roads stamp, applied where required (I)
10. . . . Topography-checked with Position Sheets for poles, fences, buildings, driveways, hydrants, shrubs, trees, pavement, walks, etc. (I)
11. . . . Utilities, existing-all shown (size and type noted) (I)
12. . . . Utilities, existing-checked water, sewer and drains against Record Drawings (I)
13. . . . Utilities, existing-checked against Position Sheets (I)
14. . . . Utilities, existing gas-checked with Gas Company (I)
15. . . . Utilities, existing- drawings and file numbers shown for sewer, water and drain record drawings (I)
16. . . . Utilities, existing-storm drain manholes and structures shown in accordance with Record Drawings (I)
17. . . . Utilities, proposed-all shown in proper symbols (size and type noted) (P)

18. . . . Utilities, proposed-checked against construction plan for each proposed utility (sewer, water gas, etc.) (P)
19. . . . North arrow and three coordinate ticks shown and labeled at multiples of 250 feet (I)
20. . . . Scales-noted at proper locations (See Sample Drawings)

B. Proposed Storm Drain.

21. . . . Drains--all shown in proper symbol (P)
22. . . . Drains--shown in proper location (P)
23. . . . Drains--dimensioned for location (dimensioned from property line) (P)
24. . . . Drains--curve data shown for pipes laid on curves (min. L. 4') (P)
25. . . . Drains--size between manholes, labeled (P)
26. . . . Drains--in State Roads, method of crossing labeled (P)
27. . . . Drains--proper clearance from other utilities shown (P)
28. . . . Drain structures--dimensioned for location (dimensioned from property lines) (P)
29. . . . Drain structures-adequate access to structures provided (P)
30. . . . Drain structures-numbered S-1, S-2, M-1, M-2, etc. starting from downstream end of system (P)
31. . . . Drain structures-curve data for junction chambers checked (P)
32. . . . Inlet Connections-size indicated (P)
33. . . . Inlets-numbered I-1, I-2, etc. starting from downstream end (P)
34. . . . Inlets- shown in proper location (P)
35. . . . Inlets- dimensioned for location (dimensioned from property line and P.C. of curb) (P)

PROFILES (DRAIN AND INLETS)

A. Supplementary Information.

1. . . . Roads and streets-existing ground and/or pavement--labeled and date noted (I)
2. . . . Roads and streets-established grade-labeled and checked against approved established grade profile (P)
3. . . . Roads and streets-name of road or street and intersecting streets-labeled (I)
4. . . . Utilities, existing-crossing and parallel lines shown and labeled (Inv. shown and size) (I)

5. . . . Utilities, existing--drainage structures and manholes shown, invert elevations shown and checked against Record Drawing (P)
6. . . . Utilities, proposed--crossings and parallel lines shown and labeled (show diameter) (P)
7. . . . Scales--shown in proper location (I)
- B. Proposed Storm Drain.
8. . . . Drains--size, type, kind and grade shown (P)
9. . . . Drains--quantity of flow and velocity of flow show (P)
10. . . . Drains--manholes numbered and stationed (P)
11. . . . Drains--manhole inverts labeled (upstream and downstream) (P)
12. . . . Drains--arithmetic of invert elevations and grades checked (P)
13. . . . Drains--profile labeled (street name) or R/W (P)
14. . . . Drains--hydraulic gradients shown (See Sample Drawing) (P)
15. . . . Drains--pipe checked for allowable maximum and minimum cover-- see Pipe Loading Tables (P)
16. . . . Drains--the use of concrete cradle, or encasement, where necessary checked-- see Pipe Loading Tables (P)
17. . . . Drain structures--stations of manhole centerline, PC and PT of bend structures, cut-ins and inlets indicated (check stationing with Plan) (P)
9. . . . Location Plan--well known streets leading to site shown (I)
10. . . . Location Plan--names of streets on which work is proposed, shown (I)
11. . . . Drainage Area Map shown-- (scale 1" = 200' except where this scale would require extra drawings, 1" = 500') (P)
12. . . . Drainage Area Map--entire drainage area shown (P)
13. . . . Drainage Area Map--entire proposed drainage system indicated schematically, complete with manhole, inlets and structures and numbers (P)
14. . . . Drainage Area Map-- each tributary area lettered for reference to schedules and runoff tabulation forms (P)
15. . . . Design Data--area letters, total tributary area, time of concentration to points under consideration, rainfall intensity and flow listed (P)
16. . . . Design Data--pipe diameter, grade, velocity and storm frequency curve listed (P)
17. . . . Structure Schedule--type, size top elevation, invert elevation (downstream end) indicated opposite number S-1, S-2, etc. If special structure, sheet number indicated where detail appears (under type) (P)
18. . . . Manhole Schedule--type, size and top elevation and invert elevation indicated for all manholes in contract (P)
19. . . . Inlet schedule--number, type, tributary area, rainfall intensity, runoff, coefficient, flow, top elevation, and invert elevation indicated for all inlets in contract (P)
20. . . . Inlets-- inlet flow checked against inlet capacity curves (P)
21. . . . Special Details-- check use of proper scales (P)
22. . . . Special Details-- shown in accordance with Standard Details as much as is feasible (P)
23. . . . Special Details-- reinforcing clearly detailed (P)
24. . . . Centerline stationing shown for all utilities in street (P)
25. . . . Full trench compaction shown for all utilities in streets over 32' in width, and for all utilities within road right of way limits on all existing streets (P)
26. . . . Protective fill indicated for all drains with less than two feet of cover (P)

GENERAL

1. . . . Title Block-- date of approval of road grade, plans and file number, designer and tracers initials, key sheet and position sheet numbers shown (I)
2. . . . General Notes--stamps (excavation) (subgrade) applied (I)
3. . . . Title of Drawing--size and location of sewer, local subdivision name and section, and election district shown (I)
4. . . . Engineers seal-- and engineers signature and license number shown (I)
5. . . . Public Works Agreement number shown (I)
6. . . . Bench mark reference, number, elevation and description (I)
7. . . . Location, Plan--scale 1" = 2000', site of proposed work shaded (P)
8. . . . Location, Plan--distance from municipality indicated (I)

FEB 24 11 12 AM '66

RECORDED FOR RECORD
 COUNTY, MD. & EXAMINED
 PER CARLAND R. GREER,
 CLERK

Design-Figure D-K

LIBER

2 PAGE 208

ORDINANCE NO. 6-R-3

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-five (55) of Harford County, Maryland, dated December 3, 1957, rezoning an area thereon shown, situate in the Third Election District of Harford County as follows (a public hearing thereon having been held on February 21, 1966):

An area, in the general vicinity of Lynchs' Corner, consisting of approximately seven and eight-tenths (7.8) acres beginning approximately 400 feet off the South side of Bel Air Road (Route 1) and extending to a depth varying from 750 feet to 1150 feet and adjacent in part to the East side of an existing right-of-way, approximately 1/4 mile East of Mountain Road (Route 152), from an "A-1" Agricultural District to an "M-1" Light Industrial District, said area to be so designated on Supplementary Zoning Map Number Fifty-five E (55-E) of Harford County, Maryland.

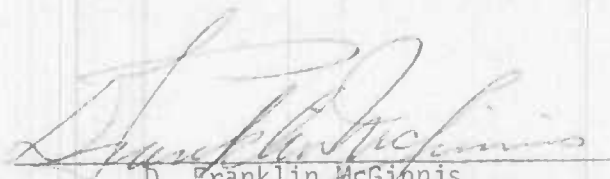
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-five (55) of Harford County dated December 3, 1957, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "M-1" Light Industrial District: said area being designated on Supplementary Zoning Map Number Fifty-five E (55-E) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

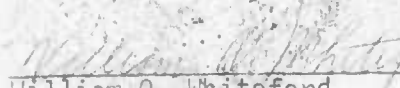
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 8th day of March, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Vice Chairman

ATTEST:


William O. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER 2
TO 2 FOLIO 208 OF THE
MAR 10 2 49 PM '66
RECEIVED HARFORD
COUNTY COMMISSIONERS
PER CLERK L. GREEN,
CLERK

LIBER 2 PAGE 240
ORDINANCE NO. 6-S-3

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-one (41) of Harford County, Maryland, dated December 3, 1957, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on February 28, 1966):

An area, in the general vicinity of Hickory, consisting of approximately two and seven-tenths (2.7) acres on the West side of Conowingo Road (Route 1) approximately 130 feet North of Underwood Lane and approximately 400 feet South of Old Route 23 Jarrettsville Road, from an "R-2" Urban Residence District to a "B-3" General Business District, said area to be so designated on Supplementary Zoning Map Number Forty-one G (41-G) of Harford County, Maryland.

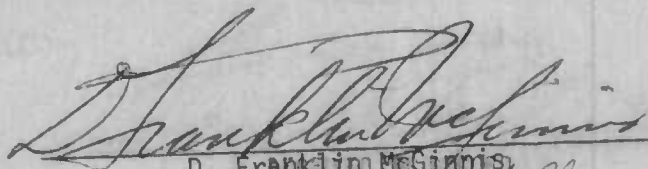
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-one (41) of Harford County dated December 3, 1957, be and it is hereby amended so as to rezone the area described above, from an "R-2" Urban Residence District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Forty-one G (41-G) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 8th day of March, 1966.


COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Vice Chairman


LIBER DRG

NO. 2 FOLIO 240 ONE OF THE

MAR 10 2 47 PM '66

 RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER CARLAND R. GREER,
CLERK

ATTEST:


William O. Whiteford
Administrative Assistant

LIBER 2 PAGE 241

ORDINANCE NO. 6-T-3

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty (40) of Harford County, Maryland, dated December 3, 1957, rezoning an area thereon shown, situate in the Third Election District of Harford County as follows (a public hearing thereon having been held on March 8, 1966):

An area consisting of approximately two hundred and seventy (270) acres on the East side of Grafton Shop Road, opposite Boggs Road, approximately 5,700 feet South of the East West Highway (Route 23), approximately 3000 feet South of Rock Spring Church Road and approximately 1800 feet West of Rocks Spring Road (Route 24), from an "A-1" Agricultural District to an "R-2" Urban Residence District, said area to be so designated on Supplementary Zoning Map Number Forty K (40-K) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty (40) of Harford County, dated December 3, 1957, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "R-2" Urban Residence District; said area being designated on Supplementary Zoning Map Number Forty K (40-K) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 15th day of March, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

RECEIVED FOR RECORD
& RECORDED IN LIBER
NO. 2 FOLIO 241 ONE OF THE

D. Franklin McGinnis
D. Franklin McGinnis
Vice Chairman

MAR 17 3 40 PM '66

W. J. Whiteford
RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER SARAH R. GREEN,
CLERK



W. J. Whiteford
William J. Whiteford
Administrative Assistant

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2 PAGE 242

CERTIFICATION

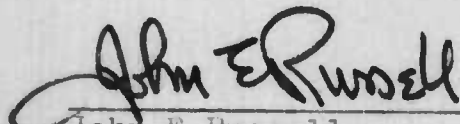
TO:

Clerk of the Circuit Court
Court House
Bel Air, Maryland. 21014

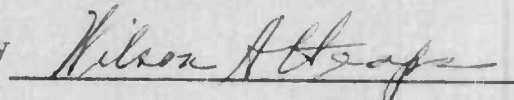
Under the provisions of Section 418 of the Public Local Laws of Harford County, being Article 13 of the Code of Public Local Laws of Maryland, the Harford County Metropolitan Commission hereby certifies that the Commission is entitled to collect taxes and other charges upon land situate in the sub-division known as Bynum Ridge in the Third Election District of Harford County.

Accordingly, the Commission requests that the Clerk not accept instruments for record for lots in Bynum Ridge or any portion thereof until the instrument offered for recording bears a notice by the Commission that all taxes or other charges due the Commission have been paid.

Attest:


John E. Russell
Secretary-Treasurer

THE HARFORD COUNTY
METROPOLITAN COMMISSION


By 
Chairman

Effective

4/8/66

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& RECORDED IN LIBER 242
NO. 2 FOLIO 242 OF THE

APR 15 9 13 AM '66

 RECORDS HARFORD
COUNTY, MD. EXAMINED
PER CLERK R. GREGG
CLERK

LIDER 2 PAGE 243

ORDINANCE NO. 6-U-3

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-six (66) of Harford County, Maryland, dated December 3, 1957, rezoning an area thereon shown, situate in the First Election District of Harford County as follows (a public hearing thereon having been held on March 28, 1966):

An area consisting of approximately three hundred and forty-six and six tenths (346.6) acres East of the intersection of Willoughby Beach and Freys Roads, on the North and South sides of Willoughby Beach and Freys Roads, extending from Otter Point Creek to the Pennsylvania Railroad, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District, said area to be so designated on Supplementary Zoning Map Number Sixty-six G (66-G) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-six (66) of Harford County, dated December 3, 1957, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area being designated on Supplementary Zoning Map Number Sixty-six G (66-G) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

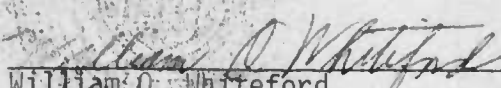
Section 2. That the Ordinance shall take effect as of the date of its passage.

APPROVED this 17th day of April 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Vice Chairman

ATTEST:


William O. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIDER 243
NO. 2 FOLIO 243 ONE OF THE

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RECORDS HARFORD
COUNTY, NO. 2 EXAMINED
PER GARLAND R. GREER,
CLERK

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APR 18 1966
HARFORD COUNTY
PLANNING AND ZONING COMMISSION
BEL AIR, MARYLAND

LIBER 2 PAGE 244

ORDINANCE NO. 6-V-3

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Maps Numbers Sixty-four (64) and Sixty-five (65) of Harford County, Maryland, dated December 3, 1957, rezoning an area thereon shown, situate in the First Election District of Harford County as follows (a public hearing thereon having been held on March 29, 1966):

An area consisting of three and forty-one hundredths (3.41) acres on the North side of Pulaski Highway (Route 40) approximately 1,700 feet West of Joppa Road, from an "A-1" Agricultural District to an "M-1" Light Industrial District, said area to be so designated on Supplementary Zoning Maps Numbers Sixty-four F and Sixty-five L (65-L) of Harford County, Maryland.

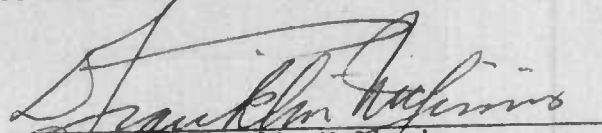
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Maps Numbers Sixty-four (64) and Sixty-five (65) of Harford County, dated December 3, 1957, be and they are hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "M-1" Light Industrial District; said area being designated on Supplementary Zoning Maps Numbers Sixty-four F (64-F) and Sixty-five L (65-L) of Harford County, Maryland; the said Supplementary Zoning Maps to be considered as a part hereof as fully as if copies were hereto attached.


Section 2. That the Ordinance shall take effect as of the date of its passage.

APPROVED this 12th day of April 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Vice Chairman

ATTEST:


William O. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER 224
NO. 2 FOLIO 244 ONE OF THE

APR 15 11 01 AM '66

RECORDS HARFORD
COUNTY, MD. EXAMINED
PER CARLAND R. GREER,
CLERK

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APR 13 1966
HARFORD COUNTY
PLANNING AND ZONING COMMISSION
BEL AIR, MARYLAND

LIBER

2 PAGE 245

ORDINANCE NO. 6-X-3

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-one (61) of Harford County, Maryland, dated December 3, 1957, rezoning an area thereon shown, situate in the First Election District of Harford County, consisting of approximately 55 acres at the Southwest quadrant of the interchange of the John F. Kennedy Memorial Highway (Route 95) and Emmorton Road (Route 24), from an "A-1" Agricultural District and an "R-2" Urban Residence District to an "M-1" Light Industrial District, said area to be so designated on Supplementary Zoning Map Number Sixty-one G (61-G) of Harford County, Maryland.

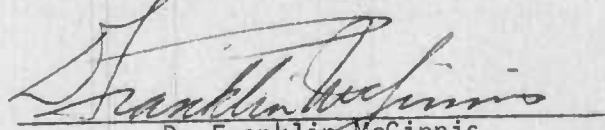
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-one (61) of Harford County, dated December 3, 1957, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District and an "R-2" Urban Residence District to an "M-1" Light Industrial District; said area being designated on Supplementary Zoning Map Number Sixty-one G (61-G) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

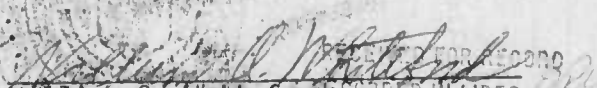
Section 2. That the Ordinance shall take effect as of the date of its passage.

APPROVED this 12th day of April 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Vice Chairman

ATTEST:


William O. Whiteford
Administrative Assistant

APR 15 11 02 AM '66

RECORDS HARFORD
COUNTY, MD. EXAMINED
PER GAIL AND R. CREER,
CLERK

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APR 13 1966

HARFORD COUNTY
PLANNING AND ZONING
BEL AIR, MD.

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LIBER 2 PAGE 246
ORDINANCE NO. 6-W-3

Amendment of the Harford County Zoning Ordinance

"I-P" INDUSTRIAL PARK DISTRICT

An Ordinance providing for the amendment of Ordinance No. 6, the Harford County Zoning Ordinance, by inserting a new Article in the Ordinance.

WHEREAS, by the provisions of Article 66B of the Annotated Code of Maryland, the County Commissioners of Harford County may enact by ordinance regulations governing the location and use of buildings, structures, and land for residence, industry, or other purposes, as was accomplished by the provisions of said Ordinance No. 6, adopted by the said Commissioners on December 5, 1957; and as amended thereafter from time to time; and

WHEREAS, by the provisions of Article 21 of the said Ordinance No. 6, the said Commissioners reserved the right to amend, supplement, or change the regulations, district boundaries, or classification of property; and

WHEREAS, the said County Commissioners of Harford County upon recommendation of the Harford County Planning and Zoning Commission deem it advisable to amend Ordinance No. 6, as hereinafter provided.

NOW, THEREFORE, the Board of County Commissioners of Harford County, Maryland, do hereby adopt and ordain the following as an amendment and addition to Ordinance No. 6, to be known as Ordinance No. 6-W-3:

Section 1. That a new Article, numbered 15-A and entitled "I-P" INDUSTRIAL PARK DISTRICT," be added to the Ordinance, to read as follows:

15-A
~~27.6~~"I-P" INDUSTRIAL PARK DISTRICT15.60
~~27.60~~PURPOSE:

The purpose of this Industrial Park District is to provide attractive sites for industry at efficient locations in a park-like environment planned for research, production, or distribution facilities. Because these industrial parks shall be located along controlled access or principal highways, [†] existing or planned, these regulations are intended to preserve for community benefit the civic design value of such highway development, and to protect the capacity of the highway system. In order to provide opportunities for employment close to home, thereby reducing travel time from home to work and lessening the burden on the highways, it is intended that these industrial parks may be located adjacent to existing or future residential neighborhoods. Therefore, these regulations are established to provide industrial development compatible with surrounding residential areas. To preserve these districts for future development as industrial centers, residences, retail or other unrelated uses shall not be permitted. These regulations shall also protect industries within the district from the adverse effect of incompatible industries.

15.61
~~27.6~~USES:15.611
~~27.61~~PRINCIPAL PERMITTED USES:15.6111
~~27.611~~

The manufacturing, compounding, processing, packaging or treatment of cosmetics, pharmaceuticals and food products, including creameries, bottling plants, bakeries, canneries, ice manufacture, freezer plants and meat packing — except fish products, sauerkraut, vinegar, yeast and rendering or refining of fats and oils, and the slaughter and dressing of the carcass.

The manufacturing, mixing, grading and packaging of paints, except that no processing of paints shall be by open kettle method.

[†] "Principal highway" is defined by Section 4.34 of the Zoning Ordinance of Harford County, and designated by the Major Road Plan as amended, or may be amended.

The manufacturing, compounding, assembling or treatment of articles or merchandise from previously prepared materials such as bone, cloth, cork, fibre, hair, leather, paper, plastics, metals, stone, tobacco, wax, yarns or wood — except where saw mills or planing mills are employed.

The manufacturing of musical instruments, toys, novelties and moulded plastic or rubber products.

The manufacturing or assembly of electrical appliances, instruments and devices, communication equipment, professional, scientific and controlling instruments, and photographic and optical goods.

The manufacturing of pottery or other similar ceramic products using only previously pulverized clay and kilns fired only by electricity or gas.

The manufacturing of electric signs, advertising structures, light sheet metal products, including heating and ventilating equipment.

Enameling, japanning, galvanizing, lacquering, plating, when accessory to a principal use.

Printing and publishing plants, typesetting and allied plants.

Automotive assembly.

Rolling, drawing, extruding, casting, and forging of nonferrous metals and plastics.

~~15.611~~ **15.6112** Research, experimental and testing laboratories and research and development centers; computer and data processing centers; engineering service centers; editorial, publication and/or distribution centers for periodicals, books, records, films and similar publications; central billing and records centers; management and real estate offices for industrial park operation; and storage and repair facilities for industrial park maintenance subject to screening requirements in Section ~~15.65~~ **15.65**.

~~15.611~~ **15.6113** Office buildings for occupants whose services are primarily oriented to the needs of the industries located in the industrial park, such as: professional

offices of physicians including industrial health clinics and biological laboratories; offices and laboratories of consulting engineers, lawyers, accountants; offices for automatic billing and mailing; offices and laboratories of trade associations, insurance companies and industrial firms; offices for manufacturers' representatives and utility companies; banks and trust companies. Ancillary services for industries such as industrial instrument repair service, small machine "job" shop, photographic service and development, computer and data processing service, printing and duplicating service, employment recruitment and testing service, post office, ^{fire station,} and similar business services; provided that an office building for such occupancy may not be the first use erected within an industrial park, nor may the amount of land used for such an office-service center complex exceed 5 per cent of the total land of the industrial park within which it is located.

Commercial facilities whose services are primarily oriented to the needs of the industries located in the industrial park, such as motel, restaurant, coffee shop, gasoline station and such personal services as barber shop, news stand, shoe repair shop, pickup station for laundry and dry cleaning, and small sundries store, provided that the personal services locate only within the motel or an office building described above (Section ~~15.6113~~ ^{15.6113}) and that the restaurant and coffee shop locate only in the motel or the office-service complex, and that the Planning Commission approve the specific location and access to the motel and the gasoline station; and further provided that such commercial facilities may not be the first use erected within an industrial park, nor may the amount of land used for such commercial facilities exceed 5 per cent of the total land of the industrial park within which it is located.

Thus the total land occupied by an office-service center complex and by permitted commercial facilities may not exceed 10 per cent of the total land of the industrial park within which it is located.

~~15.6114~~ ^{15.6114} Underground facilities for pipelines, electric power and energy, distribution lines, telephone and telegraph lines. Control instrumentation, substations, and similar above-ground equipment installations shall not be subject to minimum lot size or maximum floor space requirements, but must be screened by planting or by

ornamental wall, as specified for outdoor storage in Section ~~15.65~~^{15.65}, and must comply with the yard requirements in Sections ~~15.683~~^{15.683} and ~~15.684~~^{15.684}.

~~15.6115~~^{15.6115} Wholesale building materials display rooms, warehouses and storage yards, except that no retail sales are permitted, and provided that open storage of supplies and equipment shall be screened by dense screen planting or ornamental walls as required in Section ~~15.65~~^{15.65}.

~~15.6116~~^{15.6116} Wholesale warehouses and warehouse and service facilities for retail and chain stores, and distribution facilities, public warehouses, cold storage warehouses, except that no retail sales shall be permitted on premises.

Truck terminals provided that the location within the industrial park does not create traffic hazards to other industrial occupants; provided that the facilities are subject to the requirements for vehicular access in Section ~~15.641~~^{15.641}, the off-street parking requirements in Section ~~15.642~~^{15.642}, and the off-street loading requirements in Section ~~15.643~~^{15.643}; and provided that a truck terminal may not be the first use erected within the industrial park.

~~15.6117~~^{15.6117} Heliport, subject to standards recommended by the Federal Aviation Agency or its successor agency.

~~15.6118~~^{15.6118} Agriculture, except that no new agricultural buildings or facilities may be constructed, nor may existing agricultural structures be enlarged.

~~15.6119~~^{15.6119} Any other uses determined by the Harford County Planning and Zoning Commission, after a public hearing, to be of the same general character as the permitted uses, including products and technological processes not foreseen.

~~15.615~~^{15.615} PROHIBITED USES

~~15.6151~~^{15.6151} Any use in conflict with any Ordinance of Harford County or law of the State of Maryland regulating nuisances.

~~15.6152~~^{15.6152} Any new dwellings, mobile homes or trailer parks, hotels, tourist homes, tourist camps, or any motels except as permitted in Section ~~15.613~~^{15.613}.

15.6153 ~~15.6153~~ Auto grave yards; auto repair shops — except when operated by and for sole service of a permitted industrial use; junk yards for storage, drying, cleaning, or treatment of metal, junk, rags, glass, cloth, paper or clipping, including sorting, re-finishing, baling, wood pulling and scoring; ferrous or non-ferrous metal scrap yards; disposal of garbage or refuse.

15.6154 ~~15.6154~~ Brickyards; manufacturing of cement, ceramic tile and pipe, precast building materials, and concrete or asphalt mixing plants; manufacturing and/or storage of fireworks; bulk storage of gasoline or petroleum products, except underground storage of such products incidental to a laboratory, production plant or other permitted use, or the servicing of company-owned or leased vehicles of an occupant industry; slaughter houses; manufacture of fertilizer.

15.6155 ~~15.6155~~ Billboards, outdoor advertising signs, except signs as permitted in Section 15.661 ~~15.661~~.

15.6156 ~~15.6156~~ Hospitals, clinics, sanatoria, spas, or other institutions for human care except as provided in Sections 15.6113 ~~15.6113~~ and 15.6181 ~~15.6181~~; churches; cemeteries; schools, except training facilities for the employees and clients of permitted industrial uses; colleges and college dormitories; public buildings, except fire stations, post offices, laboratories or research, development or testing centers.

15.6157 ~~15.6157~~ Drive-in theatres; commercial recreation facilities, such as swimming pools, bowling alleys, skating rinks, billards, dancing, golf driving ranges, except recreational facilities as permitted in 15.6181 ~~15.6181~~.

15.6158 ~~15.6158~~ Shopping centers and retail facilities, including restaurants and drive-in eating establishments open to the general public, except as permitted in Sections 15.6113 ~~15.6113~~ and 15.6181 ~~15.6181~~ veterinary clinics and animal hospitals.

15.6159 ~~15.6159~~ Extraction of natural resources by mining or quarrying.

~~15.618~~

ACCESSORY USES:

~~15.6181~~

Accessory uses demonstrably related to permitted uses, including a central heating and/or air conditioning facility to service occupants of the industrial park, indoor and/or outdoor recreational facilities; dining rooms, cafeterias and picnic areas; industrial health clinics and first aid stations; technical libraries, auditoriums, employee training classrooms, meeting and display rooms; provided that all the facilities described, whether located within a plant facility for its sole use, or built as separate facilities to be shared by a group of industries resident in the park, are for use in connection with operation of principal permitted uses and are restricted for use primarily by employees and official visitors.

~~15.6182~~

Antennae; cooling towers; and air cleaning equipment and structures. All such equipment and structures, except antennae, are subject to screening requirements set forth in Section ~~15.65~~ ^{15.65}.

~~15.6183~~

Outdoor storage of equipment, product, packaged process materials or empty industrial containers, provided that the requirements are met for neatness, safety, screening and area occupied, set forth in Section ~~15.65~~ ^{15.65}.

~~15.6184~~

Signs, as provided in Section ~~15.66~~ ^{15.66}.

~~15.6185~~

Temporary buildings, trailers and vehicles for uses incidental to construction work, which buildings shall be removed, or moved to the next section of the industrial park scheduled for construction, within one month of completion or abandonment of construction.

~~15.6186~~

Other accessory uses and structures customarily incidental to any permitted principal use, not otherwise prohibited.

REQUIRED CONDITIONS:

15.62PERFORMANCE STANDARDS:15.621

Processes and equipment employed, and materials or goods used in manufacture and/or storage shall be limited to those which are not objectionable at the property line of each industrial occupant by reason of odor, dust, smoke, fumes, noise, vibration, refuse matter or water-carried waste.

15.622

Each future industrial occupant shall be required to submit to the Zoning Inspector, as part of the application for a building permit or certificate of occupancy, a qualified engineer's report describing the proposed operation, all machinery, processes, products and byproducts, stating the nature and expected levels of emission or discharge to land, air and/or water of liquid, solid or gaseous effluent under normal operation, and the specifications of treatment mechanisms and methods to be used in restricting the emission of dangerous or objectionable elements.

Applicant may appeal the decision of the Zoning Inspector to the Planning and Zoning Commission, who shall hear de novo and who in turn may hire such professional consultants as required to review the applicant's written report concerning operation and equipment. All fees and other expenses incurred in this technical review of potential level of performance and test of compatibility of the proposed operation with the adjacent land uses shall be paid by the applicant.

15.623

All uses involving operations from which there result any liquid or solid waste product, whether or not discharged to water (other than sanitary sewage) or any gaseous waste product if discharged to water, shall be subject to review by the Health Officer of Harford County or his authorized representative and by the Maryland Department of Water Resources or its successor to determine if the treatment, disposal or discharge proposed for such waste product is in compliance with the requirements of the Maryland law and of applicable regulations, policy and administrative actions of the Maryland Department of Water Resources or its successor. Prior to the issuance of any building permit or occupancy permit, written approval must be obtained from the Maryland Department of Water Resources or its successor.

15.624
~~17.027~~

All processes from which waste products shall be discharged to the sanitary sewers shall be reviewed by the Health Officer of Harford County and by the State Department of Health to determine if treatment, disposal or discharge proposed for such waste product is in compliance with the requirements of Maryland law and of applicable Maryland Department of Health regulations, policy and administrative action. Prior to issuance of any building permit or occupancy permit written approval must be obtained from the Maryland Department of Health certifying that the degree of treatment before discharge into the sanitary sewerage system is sufficient.

15.625
~~17.028~~

Prior to the issuance of any building or occupancy permit in an I-P District, there shall be filed by the applicant with the Zoning Inspector in such detail, form and manner as he shall direct, written statements from the Maryland Department of Water Resources, the Maryland Department of Health, and the Health Officer of Harford County, and such other agencies which have, or may be granted the legal authority over water and air pollution control, as evidence that the proposed use will not violate any law or regulation of any appropriate federal, state, regional or Harford County agency pertaining to pollution of water by oil, industrial wastes, sewage, debris, or other substances, or pertaining to pollution of air by dust, dirt, cinders, fly ash, gases, smoke, soot, odors, fumes or similar emanations.

Except that, should a person, firm or corporation wishing to locate in an I-P District submit to the appropriate federal, state, regional or Harford County agency detailed information on the proposed operations and plans for the treatment and disposal of active or potential pollutants of water or air, together with a request that the agencies approve or comment upon the proposed operations and plans as submitted, and should one or several of these agencies not furnish the requested approval or comment within 60 days after such request is made, and by filing notification with the Zoning Inspector, the Zoning Inspector may then take action on the building permit application without this supplemental information, and on the basis of best available knowledge.

15.626
~~17.029~~

All processes which involve the use and/or storage of flammable, explosive or radioactive materials must meet the requirements of the National Fire Codes as amended and the regulations of the Atomic Energy Commission or its successor agency.

and the regulations, policy and administrative actions of the Maryland Department of Health set forth in radiation protection standards as amended.

~~15.627~~

~~17.627~~ All buildings and structures must be of fireproof construction to meet the requirements of the National Fire Codes as amended for the industrial use which will occupy such structures, and the Building Code of Harford County when enacted and as thereafter amended.

~~15.63~~

DEVELOPMENT PLAN AND SITE PLAN APPROVAL

~~15.631~~

~~17.631~~ No building permit shall be issued on any lot in an I-P District until the Harford County Planning and Zoning Commission has approved a preliminary Development Plan for the entire industrial park and a site plan for such lot.

~~15.632~~

DEVELOPMENT PLAN

In acting upon the preliminary or amended Development Plan for the industrial park, the Planning and Zoning Commission shall consider the effect of the design and operations of the park upon the environs as well as upon the future industrial occupants. The Planning and Zoning Commission shall approve:

layout of the industrial park with respect to arrangement and width of internal roads and driveways giving access to public highways; preservation of natural topographic features such as water courses and large trees, with the objective of achieving maximum compatibility between proposed development and the surrounding uses, and to insure a park-like environment within the development;

layout of all internal roads and proposed traffic flow;

grading plan, drainage structures, installation of water lines and sanitary sewage treatment and disposal facilities, and development plan for other utilities;

major and secondary orientation of peripheral lots;

safety and screening aspects of landscape development plan for peripheral lots abutting highways and/or residential districts and for lots abutting roads and streets and ingress and egress drives within the industrial park.

~~17.633~~
15.633

SITE PLAN

In acting upon the Site Plan for a lot, the Planning and Zoning Commission shall approve:

preservation of natural topographic features such as water courses and large trees; with the objective of achieving maximum compatibility among the proposed industrial facility, the industrial park and the surrounding areas;

layout of site with respect to arrangement and width of driveways on site giving access to public highways or to internal roads;

grading plan, drainage structures, installation of water lines and sanitary sewage and disposal facilities, and site plan for other utilities;

identification of front, side and rear lot and yard lines for the specific lot;

location, height and orientation of proposed buildings;

identity of occupant and nature of activity;

number of employees on major shift and on second largest overlapping shift, so that adequacy of proposed parking can be evaluated;

location of parking lots, traffic flow, grading, drainage, paving materials, marking of spaces and directional arrows or signs, placement of lighting, screening from adjacent residential areas, and spatial adequacy of parking facilities in relation to proposed employment on major and overlapping shifts;

location of loading docks, adequacy of loading berths, number of trucks and/or trailers to be stored on site, placement of lighting, and screening from adjacent residential areas;

location, size and proposed lighting of signs;

location, safety provisions, screening and ground area of outdoor storage;

safety and screening aspects of the ornamental planting and landscape development plan.

~~17.634~~
15.634

Before granting approval to a preliminary Development Plan for the industrial park, and a Site Plan for a specific lot, the Planning and Zoning Commission shall obtain recommendations from the proper authorities having jurisdiction thereof, including the County Health Department, Harford County Public Works Department,

Harford County Metropolitan Commission, and such other county officers and State of Maryland agencies as may be deemed necessary as to the adequacy of those aspects of the plans pertinent to their department, with special attention to the effect of such approval upon existing services and utilities. The Planning and Zoning Commission shall take action upon such plans within 90 days of the filing of the plans.

~~15.64~~
~~17.64~~

VEHICULAR ACCESS, AND OFF-STREET PARKING AND LOADING REQUIREMENTS:

~~15.641~~
~~17.641~~

VEHICULAR ACCESS

~~15.6411~~
~~17.6411~~

Vehicular access to industrial parks shall be permitted only to the following types of streets:

principal highways

connecting or secondary arterial highways

privateway connecting only with any of the above highways, and not directly connected with any residential street.

~~15.6412~~
~~17.6412~~

The designation of any street or highway as to type shall be in conformance with that shown on the adopted Major Road Plan of Harford County as amended or may be amended. In the case of industrial park district applications in areas not covered by such plan, the Planning and Zoning Commission may, at the time of reviewing an application, designate by type all streets and highways adjacent to and within the proposed district.

For the purpose of the above, streets and highways shall be defined by Section 434 of the Zoning Ordinance of Harford County, and designated by the Major Road Plan as amended, or may be amended.

~~15.6413~~
~~17.6413~~

The developer of an industrial park abutting on principal highway or secondary arterial highway divided by a median strip, and designated in the adopted Major Road Plan of Harford County, may request the State Roads Commission for vehicular crossovers of the median strip at a minimum distance of 750 feet between crossovers. Each median crossover shall be no less than 250 feet from the property line intersecting the highway frontage.

~~15.6414~~

The developer of an industrial park lot abutting on principal highway or secondary arterial highway as designated in the adopted Major Road Plan of Harford County may request the Harford County Department of Public Works or the State Roads Commission for curb cuts not less than 200 feet from the adjoining property outside the industrial park, and not closer than 200 feet between entrances or exits.

~~15.6415~~

All streets within the industrial park shall be built to Harford County specifications for industrial traffic, and may be dedicated to the County.

~~15.642~~

OFF-STREET PARKING FACILITIES

~~15.6421~~

Notwithstanding other requirements of this Ordinance, space for the off-street parking and storage of vehicles shall be provided in accordance with the following schedule:

1 space per 1-1/2 employees, based upon the combined employment count of main shift plus following or preceding shift, whichever is greater; plus

1 space for visitors' use per 25 employees on main shift; plus

1 space for each company-owned or leased truck, trailer, auto or other vehicle usually based at the premises.

~~15.6422~~

Plans for off-street parking areas shall be subject to approval of the Planning and Zoning Commission. Plans must show in detail the location and dimensions of the parking areas, and indicate the manner in which facilities are designed to meet other requirements or conditions of this Ordinance.

~~15.6423~~

No access or egress from parking areas shall open into a residential street.

~~15.6424~~

All parking areas adjacent to residential or agricultural zones not recommended for commercial or industrial use on the Master Plan and not used for public or private off-street parking shall be screened by planting or ornamental wall from view from nearest residence in residential zone. Screening shall be maintained in good condition.

~~15.6425~~

Limitations on use of required yards for parking are defined in Section ~~15.684~~.

15.6426
~~17.6426~~ All off-street parking areas shall be drained to prevent damage to abutting public or private property, shall be paved to County specifications, individual spaces clearly marked, and directional arrows and traffic signs provided as necessary traffic controls.

15.6427
~~17.6427~~ In parking lots of one acre or more, at least 5 percent of the area of such parking lot shall be devoted to trees and other planting within the interior of the parking lot.

15.6428
~~17.6428~~ Adequate lighting shall be provided if parking facilities are to be used at night. Lighting shall be installed and maintained to prevent reflection or cause glare into abutting or facing premises in residential or agricultural districts, and to prevent reflection or glare from adversely affecting safe vision of operators of vehicles moving on roads and highways.

15.643
~~17.643~~ OFF-STREET LOADING FACILITIES

15.6431
~~17.6431~~ Notwithstanding other requirements of this Ordinance, minimum off-street loading areas shall be provided in accordance with the following schedule:

for buildings with floor area of 10,000 to 25,000 square feet: 1 berth;

for each additional 25,000 square feet or fraction thereof up to 100,000 square feet of floor area: 1 berth;

for each additional 50,000 square feet or fraction thereof above 100,000 square feet of floor area: 1 berth.

15.6432
~~17.6432~~ Each loading space or berth shall be no less than 14 feet in width and 60 feet in length. In addition to the 60-foot depth of this truck position, an adequate apron or maneuvering area is required to be approved by the Planning and Zoning Commission.

15.6433
~~17.6433~~ The Planning and Zoning Commission may authorize a modification or reduction of the off-street loading area if it should find that, because of the peculiar nature of the industrial use, smaller trucks shall be used, except that at least one loading space or berth for each establishment shall be of the above-required dimensions to accommodate large tractor-trailer trucks.

15.6434

~~15.6434~~ No access or egress from truck loading areas shall open into a residential street.

15.6435

~~15.6435~~ All loading areas adjacent to residential or agricultural zones not recommended for commercial or industrial uses on the Master Plan and not used for public or private parking or loading shall be screened from nearest property in residential zone by planting or ornamental wall, properly maintained at all times.

15.6436

~~15.6436~~ No off-street loading area shall occupy or abut the front yard. Limitations on use of other required yards for off-street loading are defined in Section 15.684.

15.6437

~~15.6437~~ All off-street loading areas shall be drained to prevent damage to abutting public or private property, shall be paved to County specifications, individual spaces clearly marked, and directional arrows and traffic signs provided as necessary traffic controls.

15.6438

~~15.6438~~ All lighting of off-street loading areas shall be installed and maintained to prevent reflection or glare into abutting or facing premises in residential or agricultural districts, and to prevent reflection or glare from adversely affecting safe vision of operators of vehicles moving on roads and highways.

15.65

BUILDING ORIENTATION, LANDSCAPE DEVELOPMENT AND SCREENING PLAN, UTILITIES PLAN, AND OUTDOOR STORAGE

15.651

BUILDING ORIENTATION

All structures on lots adjacent to existing or planned controlled access or principal highways designated in the Major Road Plan as amended shall be oriented to the respective highway or highways. The architectural treatment of all walls visible from the highway shall be equal and harmonious in design and in quality of materials with the front elevation of the structure.

15.652

LANDSCAPE DEVELOPMENT AND SCREENING PLAN

15.6521

~~15.6521~~ A preliminary landscape development plan shall be submitted for approval to the Planning and Zoning Commission as part of the preliminary Development

Plan. This plan shall show: those natural topographic features, such as water courses, large trees, tree groves, to be preserved and those to be altered or removed; proposed location, character and elevation of plantings, regrading and/or architectural treatment to be used as screening on peripheral lots abutting highways and/or residential or agricultural districts; and detailed landscape development plan for specific lot for which building permit is requested, including all required screening.

15.6522
~~17.6522~~ Any part of a lot not used for buildings or other structures, or paved for off-street parking, loading and maneuvering areas, drives and pedestrian walks, or for outside storage, shall be planted with trees, flowers, shrubs and either grass lawns, or other appropriate planted ground cover, all of which shall be properly maintained at all times.

15.6523
~~17.6523~~ Cooling towers, air cleaning equipment and structures and other permitted above ground accessory installations shall be screened from view of any adjacent property by planting or by ornamental wall, all of which shall be properly maintained.

15.6524
~~17.6524~~ All required screening, described in other sections of these industrial park district regulations, whether planted or architectural, shall be properly maintained.

15.653
~~17.653~~ UTILITIES PLAN

A preliminary utilities plan shall be submitted for approval to the Planning and Zoning Commission as part of the preliminary Development Plan. This plan shall show the size and the proposed location of all exterior lines and equipment. All utilities shall be underground, except control instrumentation and substations which shall be screened by planting or ornamental wall. No overhead wires are permitted within the park.

15.654
~~17.654~~ OUTDOOR STORAGE

15.6541
~~17.6541~~ Outdoor storage of equipment, products, packaged process materials or empty industrial containers shall be maintained in a neat and orderly pattern, subject to the safety requirements of the National Fire Codes, as amended.

15.6542

Such storage shall be screened from view of any adjacent property by planting or by ornamental wall at least 6 feet but not more than 12 feet in height. No storage shall be higher than the height of the screening. All screening shall be properly maintained.

15.6543

Outdoor storage may occupy in aggregate not more than 20 percent of the total ground area of the site. No outdoor storage shall be permitted in the front yard.

15.6544

Temporary outdoor storage of building materials used for structures on a specific lot is permitted without screening during construction and for a period not to exceed 30 days thereafter. This restriction is in addition to the requirement in Section 15.6185 ~~15.6185~~ regulating temporary construction sheds, offices and vehicles.

15.66SIGNS AND EXTERIOR LIGHTING15.660PURPOSE

The purpose of these standards is to limit the use of signs in industrial parks to serve only the following functions: (a) to identify the industrial park; (b) to inform prospective occupants of the availability of land and buildings therein for sale or lease; (c) to identify the occupant of a building within the park; (d) to provide directional and safety information to occupants and visitors to the park; and (e) to protect the appearance of the industrial park and its environs, and to protect its occupants, neighbors and passing vehicles against glare, flashing or moving lights, roof signs, hanging or projecting signs, billboards, panel signs or other signs herein prohibited, except where specifically permitted; and (f) to prohibit advertising of any business or service not conducted at the premises on which the sign is located.

It is the intent that each permitted occupant is entitled to identify the company name and division on each wall of the principal structure or structures on his site.

It is also the intent of this regulation to insure that any permitted sign shall be readable to the passing viewer. Therefore, the overall size of the sign and the lettering thereon shall be determined by the distance from which the sign is to be viewed, rather than by a ratio of sign area to length or area of building wall, or of

length of street or highway frontage of the site.

15.661

~~17.661~~ SIGNS PERMITTED

real estate signs, which are subject to requirements of Article 17.22;

signs to identify the industrial park, to be limited to:

- 1 sign for each highway frontage
- 1 sign for each entrance to park
- 1 directory of occupants for each entrance to park

signs to identify the use or occupant which shall be designed as part of the architectural design of and attached to the building. Any identification signs detached from building shall be executed in planted materials, except for lighting fixtures, and designed as part of the site plan for the lot;

directional or information signs;

flags, permanent: United States, State of Maryland, Harford County, and company flag or emblem;

flags, temporary for honorary day or week: flags of other states, nations or political bodies such as United Nations, civic or religious. All permitted flags to be displayed only on official flagpoles.

15.662

~~17.662~~ SIGNS PROHIBITED

any billboards;

any form of signs advertising a business, profession, commodity, service or entertainment conducted, sold or offered elsewhere than upon the same lot; except that the Directory of occupants of the industrial park is not included in this prohibition.

flashing, revolving, rotating, or changing light intensity or changing color signs;

hanging or projecting signs;

signs extending above roof or parapet of any structure adjacent to a controlled access or a principal highway;

signs painted or pasted directly upon any wall.

15.663

~~17.663~~ SIZE OF SIGNS

Legibility rather than conspicuity is the permitted function of signs to identify the

occupant of premises in the industrial park; therefore, size of the signs and the letters thereon shall be determined by the distance the sign is to be viewed. The Planning and Zoning Commission in reviewing proposed signs as part of the Development Plan and the Site Plan may require an increase or decrease in the size of sign or letters, using as reference the visibility studies for highway signs of the United States Bureau of Public Roads or its successor agency.

15.664
~~17.66~~

EXTERIOR LIGHTING

Major structures and detached signs executed in planted materials may be flood or spot-lighted, providing such lights are not directed toward any other districts, highways or streets.

Parking lot or loading area lights or light standards, if located near screening strips adjacent to residential or agricultural districts shall be shielded to direct light away from adjacent uses, as required in Sections 15.642 and 15.643 ~~17.642~~ and ~~17.643~~.

15.665
~~17.665~~

APPROVAL OF SIGNS AND EXTERIOR LIGHTING BY PLANNING AND ZONING COMMISSION

Design, size and lettering, and location of all signs and all exterior lighting shall be included as part of the Development Plan and the Site Plan submitted for approval of the Planning and Zoning Commission. Exterior spot or flood-lighting of signs and buildings shall be shielded to direct light away from adjacent residential or agricultural districts, and to prevent reflection or glare from adversely affecting safe vision of operators of vehicles moving on roads, streets and highways.

15.67
~~17.67~~

CHANGE IN NATURE OF OCCUPANCY

Any change in nature of occupancy, such as an increase of 5 percent or more in number of employees, change in working hours resulting in overlap of shifts, expansion in physical facilities including increase in total floor space, change in ground area used for open storage, change in industrial process, or change in nature of industrial activity of an existing occupant, or change to a new occupant may require a new occupancy permit. The existing or proposed new occupant shall apply to the Zoning

Inspector indicating the proposed change in detail. The Zoning Inspector may obtain reports from the proper authorities having jurisdiction therein including State and County agencies, to insure that the change in operational characteristics will meet all standards and requirements in these industrial park regulations.

The Zoning Inspector shall issue a new occupancy permit if required and approved.

~~15.68~~

HEIGHT, AREA AND YARD REQUIREMENTS

~~15.680~~

Notwithstanding any other requirements in this Ordinance, height, area and yard requirements shall be provided in accordance with the following schedules:

~~15.681~~

HEIGHT REGULATIONS

No building shall exceed 100 feet in height, except that antennae towers and other structures excluded from height control pursuant to Section 18.2 are not so restricted.

~~15.682~~

AREA REQUIREMENTS

~~15.6821~~

The minimum district size for an industrial park shall be 25 acres. The minimum frontage on an existing or proposed principal highway shall be 800 feet. The minimum tract addition, where such tract adjoins and has a common boundary with an I-P, M-1 or M-2 district, shall be 2 acres, except that there shall be no size limit to an addition to I-P when such addition is for expansion of an existing industrial facility.

~~15.6822~~

The minimum ground area of any site shall be 2 acres. The minimum lot frontage shall be 200 feet, except that any industrial park lot abutting a principal highway or secondary arterial highway shall meet the requirements for curb cuts set forth in Section ~~15.641~~ on Vehicular Access.

~~15.6823~~

The minimum ground area of any principal building shall be 10,000 square feet, except public utility buildings and structures necessary for public convenience and service. A principal building may be occupied by two industrial occupants, providing the subdivided structure is so constructed as to meet the requirements of the National Fire Codes as amended for each industrial use, and the requirements of the

Building Code of Harford County when enacted and as thereafter amended.

~~15.6824~~ The maximum ground area of any lot covered by structure, including accessory buildings, shall not exceed 40 percent of the total area of the lot. Enclosed portions of off-street loading areas under roof shall not be included in computation of ground area of structure.

~~15.683~~ **YARD REQUIREMENTS**

Front, side and rear yards shall be provided in accordance with the following schedule:

<u>Location of Yard and Character of Vicinity</u>	<u>Yard</u>
That yard which is adjoining a residential or agricultural district shall be	150 feet
That yard which is adjoining a business or industrial district shall be	75 feet
Yards adjoining controlled access highways, existing or planned and designated in the Major Road Plan as amended, measured from highway right-of-way, shall be	150 feet
Yards adjoining principal highways existing or planned and designated in the Major Road Plan as amended, measured from highway right-of-way, shall be	100 feet
Yards adjoining a street or private way in the industrial park district shall be	50 feet

~~15.684~~ **REQUIRED CONDITIONS ON USE OF YARDS**

~~15.6841~~ **Front Yards**

Walks, drives and a designated area for visitor-executive parking may occupy up to 30 percent of the required front yard. This parking area shall be screened by planting, such as planted berms, thick evergreen hedge, or by architectural treatment in keeping with the design of front elevation of the major building. No off-street loading area may occupy or abut a front yard.

The remainder of the front yard shall be planted in grass and other suitable ground cover planting materials, such as flowers, ornamental shrubs or trees, and shall be properly maintained. Such plantings shall not interfere with safe vision of operators of moving vehicles.

No outside storage is permitted in the front yard.

15.6842

~~17.6842~~ Side Yards

A buffer strip not less than 10 feet in width shall be maintained the full length of each side yard within the industrial park district, with suitable planting. The remainder of the side yard may be used for employee and visitor parking, or for off-street truck or rail loading facilities, or outside storage.

When the side yard abuts a residential or agricultural district, and is used for vehicle parking, loading facilities or outside storage, a buffer strip not less than 15 feet in width shall be maintained the full length of each side yard. Screen planting or ~~ornamental wall~~ shall be at a height to screen substantially the view of the parking, loading or storage areas from the residential or agricultural district.

15.6843

~~17.6843~~ Rear Yards

Requirements are the same as side yards.

15.6845

~~17.6845~~ Yards Adjacent to Controlled Access Highways

That portion of any lot where the property line is adjacent to the right-of-way of an existing or planned controlled access highway, designated on the Major Road Plan as amended, shall meet the requirements set forth herein for front yards.

15.6846

~~17.6846~~ Any portions of side and rear yards not in use as permitted above, shall be planted in grass or other suitable ground cover planting materials, and shall be planted with flowers, ornamental shrubs or trees, and maintained at all times. Such plantings shall not interfere with safe vision of operators of moving vehicles.

15.69

~~17.69~~ Nothing in these regulations shall supercede or conflict with any federal or state legislation now in effect or which may be enacted.

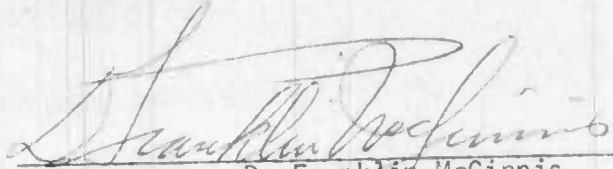
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2 PAGE 269

Section 2. That this Ordinance shall be in full force and effect from the date of its passage.

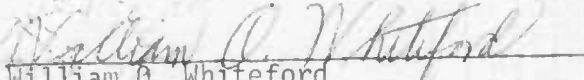
Approved this 25th day of April, 1966.

BOARD OF COUNTY COMMISSIONERS OF HARFORD COUNTY



D. Franklin McGinnis
Vice Chairman

ATTEST:


William O. Whiteford
Administrative Assistant

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ORDINANCE NO. 6-Y-3

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-one (41) of Harford County, Maryland, dated December 3, 1957, rezoning an area thereon shown, situate in the Third Election District of Harford County as follows (public hearings thereon having been held on December 14, 1965 and April 13, 1966, respectively):

An area consisting of approximately nine (9) acres on the North side of Moores Mill Road, approximately 225 feet East of Conowingo Road (Route 1) from an "R-2" Urban Residence District to an "R-3" Multi-Family Residence District and a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number Forty-one H (41-H) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-one (41) of Harford County, dated December 3, 1957, be and it is hereby amended so as to rezone the area described above, from an "R-2" Urban Residence District to an "R-3" Multi-Family Residence District and a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Forty-one H (41-H) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 3rd day of May 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

Franklin F. ...

ATTEST:

William O. Whiteford
William O. Whiteford
Administrative Assistant

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2 271

ORDINANCE NO. 6-Z-3

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Thirty-two (32) of Harford County, Maryland, dated December 3, 1957, rezoning an area thereon shown, situate in the Fourth Election District of Harford County as follows (a public hearing thereon having been held on March 29, 1966):

An area consisting of approximately two acres on the North side of Jarrettsville Road (County) approximately 200 feet West of Cooptown Road, adjoining in part the Westerly limits of the current "B-2" Community Business District, from an "A-1" Agricultural District to a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number Thirty-two E (32-E) of Harford County, Maryland.

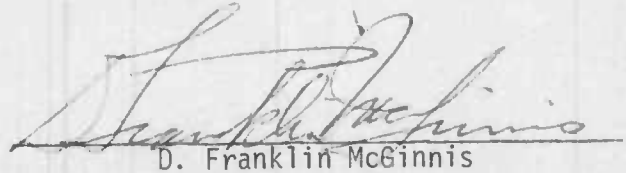
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Thirty-two of Harford County, dated December 3, 1957, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Thirty-two E (32-E) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 31st day of May, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

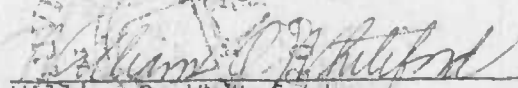

D. Franklin McGinnis
Chairman

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PER GARLAND R. GREER,
CLERK

ATTEST:


William O. Whiteford
Administrative Assistant

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ORDINANCE NO. 6-A-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to (1), correct certain discrepancies in Zoning Districts existing between the two sets of Zoning Maps, adopted December 3, 1957, and amendments thereto, (one set which is recorded in the Court House and the other an attested set on file in the Office of the Zoning Inspector); (2), and/or to eliminate the discrepancies by the preparation of New Zoning Maps for adoption; (3), and/or to clarify and/or establish limits of certain zoning districts by extension and modification of the limits; (4), and/or to incorporate as a part of the New Zoning Maps, the Supplementary Zoning designating previous rezoning areas; and (5), and/or to incorporate any other authorized change.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That the original Zoning Maps dated December 3, 1957, and amendments thereto be and are hereby superseded by the New Edition of the Official Zoning Maps dated 11 July 1966.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 4 day of July 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

D. Franklin McGinnis
D. Franklin McGinnis
Chairman

ATTEST:

William A. Whitford
William A. Whitford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER 2
NO. 2 FOLIO 22 ONE OF THE
JUL 11 3 11 PM '66
Clerk
COUNTY NO. 1 EXAMINED
PER GARLAND H. GREER,
CLERK

LIBER

2 PAGE 273

RESOLUTION NO. _____

RESOLVED by the County Commissioners of Harford County, Maryland, a Municipal Corporation of the State of Maryland, that pursuant to the provisions of Article 25, Section 3(c) of the Annotated Code of Maryland the license agreement entered into between the County Commissioners of Harford County, Maryland, and Multiview Cable Company, which agreement is dated 11 July, 1966, and is attached hereto and made a part of this Resolution, be and it is hereby approved and confirmed.

This Resolution shall be effective this 11 day of

July, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

By: D. Franklin McGinnis

D. Franklin McGinnis
Chairman

William O. Whiteford

William O. Whiteford
Administrative Assistant

LICENSE, CONTRACT AND GRANT RELATING TO
TELEVISION TRANSMISSION AND DISTRIBUTION SYSTEM
IN HARFORD COUNTY, MARYLAND

THIS AGREEMENT is entered into pursuant to Article 25, Section 3(c) of the Annotated Code of Maryland by and between the COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND and MULTIVIEW CABLE COMPANY, a Maryland corporation, its successors, assigns and designees, and the same WITNESSETH:

SECTION 1: Grant of License

In consideration of the faithful performance and observance of the conditions, reservations, and limitations hereinafter specified, and in consideration of the payments provided for herein, the non-exclusive right is hereby granted to Multiview Cable Company, hereinafter called the Company, for a period of Twenty-five (25) years - renewable at the option of the County for an additional Twenty-five (25) years - from the effective date hereof, unless sooner terminated pursuant to the provisions of this Agreement, to erect, maintain and operate television transmission and distribution facilities and extensions thereto commonly referred to as a cable television transmission system, in, under, over, along, across, and upon the streets, lanes, avenues, sidewalks, alleys, bridges, and other public places in Harford County, Maryland, and subsequent additions thereto, solely for the purpose of transmission and distribution of audio and visual impulses and television energy as hereinafter defined, in accordance with the laws and regulations of the United States of America, the State of Maryland, and the ordinances and regulations of Harford County.

SECTION 2: Definitions

For the purposes of this Agreement the following terms, phrases, words, and their derivations shall have the meaning given herein. When not inconsistent with the context, words used in the present tense include the future, words in the plural number include the singular number and words in the singular number include the plural number. The word "shall" is always mandatory and not merely directory.

- (a) "County" shall mean Harford County, Maryland.
- (b) "Company" shall mean the grantee of rights under this license, its successors and assigns.
- (c) "Commissioners" shall mean the County Commissioners of Harford County, Maryland.
- (d) "Person" shall mean any person, firm, partnership, association, corporation, company or organization of any kind.
- (e) "Subscriber" shall mean any "Person" so described in part (d) who purchases service from the "Company." The person may purchase any or all of the services which the Company may provide.
- (f) "Cable Television System" shall mean a system for the transmission of visual and/or audio signals by means of electrical impulses over coaxial cables or other suitable means, consistent with the services being offered and the state-of-the-art within the industry.

SECTION 3: Construction, Maintenance and Removal of Facilities.

The poles and posts used for the Company's television distribution system shall be those erected by it or its successors and assigns, and/or erected and maintained by such other persons, firms

or corporations maintaining poles or posts within the County limits, when and where practicable, providing mutually satisfactory rental agreements can be entered into with said persons, firms or corporations.

Construction and maintenance of the transmission distribution system shall be in accordance with the provisions of National Electric Safety Code, prepared by the National Bureau of Standards, the National Electric Code of the National Board of Fire Underwriters, and such applicable ordinances and regulations of the County affecting electrical installations, which may be in effect now or in the future.

All installations shall be of permanent nature and installed in accordance with good engineering practices, and shall be of sufficient height to comply with all County regulations, ordinances and state laws so as not to interfere in any manner with the right of the public or individual property owners, and shall not interfere with the travel and use of public places by the public, and during construction, repair or removal thereof shall not obstruct nor impede traffic.

The Company's transmission and distribution system, poles, wires, trenches and excavations, and appurtenances shall be located, erected and maintained so as not to endanger the lives of persons, or cause damage to property, or to interfere with new improvements the County may deem proper to make, or to unnecessarily hinder or obstruct the free use of the public highways, streets, alleys, and other public ways, and removal of poles to avoid such interference will be at the Company's expense.

In the maintenance and operation of the television transmission and distribution system in the County and in the course of construction or additions to its facilities the Company shall proceed so as to cause the least possible inconvenience to the general public. Any opening or obstruction in the streets or other public places made

by the Company in the course of its operations or the operations of its successors or assigns, shall be guarded and protected at all times by the placement of adequate barriers, fencings, or boardings, the bounds of which during periods of dusk and darkness shall be designated by warning lights of approved types. Any openings in the streets or other public places shall be repaired and replaced in accordance with the policies established by the Director of Public Works of Harford County.

The Company agrees to remove the facilities erected under the terms of this license in the event the Company ceases to operate hereunder. The Company further agrees to provide the County with a surety bond in the amount of Five Thousand Dollars (\$5,000.00) to protect it from loss arising from such removal.

SECTION 4: Use of Company Facilities by County.

The Company shall grant to the County, free of expense, joint use of any and all poles owned by it for any proper municipal purpose acceptable to the Company, insofar as that may be done without interfering with the free use and enjoyment of the Company's own wires and facilities, and the County shall hold the Company harmless from any and all actions, causes of action, or damages and expenses caused by the placing of the County's wires or appurtenances upon the poles of the Company. Proper regard shall be given to all existing safety rules governing construction and maintenance in effect at the time of such construction.

SECTION 5: Indemnification of the County by the Company.

A. The Company shall indemnify, protect and save harmless the County from and against any losses and physical damages to property and bodily injuries or death to persons, including payments made under

any Workmen's Compensation law, which may arise out of or be caused by the construction, maintenance, use or removal of the Company's facilities within the County or by any act of the Company, its agents or employees.

The Company shall procure and keep in force insurance to protect the parties hereto from and against all claims, demands, actions, judgments, costs, expenses, and liabilities which may arise or result, directly or indirectly, from or by reason of any such loss, injury, or damage. The amounts of such insurance against liability due to physical damage to property shall not be less than Two Hundred Thousand Dollars (\$200,000.00) aggregate in any single policy year. The amounts of such insurance against liability for bodily injury or death shall be not less than Three Hundred Thousand Dollars (\$300,000.00) as to any one person and not less than Five Hundred Thousand Dollars (\$500,000.00) as to any one accident.

B. The Company hereby agrees to save harmless the County in the event the County should be sued for copyright infringement, unfair competition, unwarranted broadcasting or telecasting or any other suit directly or indirectly relating to this Agreement. The Company further agrees to reimburse the County for any legal expenses, court costs, and other incidental expenses which may be incurred by said County as the result of said litigation.

SECTION 6: Rates.

In its rates, charges, service facilities, rules, regulations or in any other respect, the Company shall not make or grant any preference or advantage to any person, nor subject any person to any prejudice or disadvantage, provided that nothing in this license shall be deemed to prohibit the establishment of a graduated scale

of charges and classified rate schedules to which any customer coming within such classification would be entitled.

SECTION 7: Local TV Stations.

The Company agrees that it will include any TV station located in the area in its transmission and distribution system and in so doing will observe and apply the same standards of quality regarding the transmission and distribution of TV signals and impulses as are applied to all stations included in the system.

SECTION 8: Restrictions on Company.

The Company agrees that it will not engage in the sale or servicing of television or radio receivers.

The license awarded herein shall not be assigned or transferred without the prior consent of the County Commissioners; provided, however, that such consent shall not be unreasonably withheld when it has been demonstrated that the proposed assignee or transferee is legally and financially qualified to continue the operation of the system in the public interest.

SECTION 9: Special Service.

The Company shall, without charge for installation, maintenance, or service, make single installations of its standard cable television facilities at each fire station, public and private school within the County, passed by the cable system or within reasonable proximity thereto.

Grantee shall make one channel available, on a temporary basis, without charge, to Harford County, the State of Maryland, and/or the United States of America, to communicate to residents of Harford County emergency information designed to protect or save lives or property.

SECTION 10: Surrender of License

The Grantee may surrender this License at any time upon filing with Harford County a written notice of its intention to do so at least sixty (60) days before the surrender date. On the surrender date specified in such notice, all the rights and privileges and all of the obligations, duties and liabilities of the Grantee under this Agreement shall cease and terminate, except that Grantee shall have an additional six (6) months to remove its plant and equipment from County streets and all other public lands upon which it is located. At the end of the said six (6) months, any property owned by the Grantee and not removed from County properties will become the property of the County to do with as it may choose. Any costs accruing to the County in removing the Grantee's former possessions from its streets or lands will be a claim against Grantee.

SECTION 11: License.

The Company agrees to pay to the County a license fee of One hundred Dollars (\$ 100⁰⁰~~xx~~) per year, or fraction thereof; said license to be issued by the Treasurer of Harford County and renewed on July first of each year; provided, however, the said license fee shall not be due and payable until the Company begins delivery of program to subscribers.

SECTION 12: Service to be Rendered.

The Company shall install an "all-band" Community Antenna System capable of distributing up to twelve (12) television channels, or their equivalent, said system to be installed and maintained in accordance with the best accepted standards of the Community Antenna

Television Industry.

SECTION 13: In Case of Partial Invalidity.

If any section, sentence, clause or phrase of this Agreement is for any reason held to be invalid or unconstitutional, such invalidity shall not affect the validity of the contract as a whole, and any portions so invalidated shall be held to be eliminated herefrom.

IN WITNESS WHEREOF the parties have caused this license and contract to be executed by their respective officers and representatives, this 11th day of July, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY
D. Franklin McGinnis
D. Franklin McGinnis
Chairman
John H. O'Neill
John H. O'Neill

MULTIVIEW CABLE COMPANY
By: Virginia F. Pate
Virginia F. Pate, President



ATTEST:
Charles W. Irwin
Charles W. Irwin, Secretary

APPROVED by the County Commissioners of Harford County, Maryland, this 11th day of July, 1966.

D. Franklin McGinnis

ATTEST:
William R. Whitford

RECEIVED FOR RECORD
& RECORDED IN LIBER 281
NO. 2 FOLIO 27 ONE OF THE
JUL 13 12 19 PM '66
CLERK



LIBER

2 PAGE 282

ORDINANCE NO. 6-B-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-one (61) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County as follows (a public hearing thereon having been held on June 7, 1966):

An area consisting of approximately four and one-half (4 1/2) acres on the West side of Van Bibber Road, South of The John F. Kennedy Memorial Highway, approximately 1/4 mile South of the intersection of Walton and Van Bibber Roads and approximately 500 feet North of Snow Road, from an "R-2" Urban Residence District to a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number Sixty-one A (61-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-one (61) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "R-2" Urban Residence District to a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Sixty-one A (61-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 13th day of July 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

D. Franklin McGinnis
Chairman

RECEIVED FOR RECORD
& RECORDED IN LIBER 282
NO. 2 FOLIO 282 ONE OF THE

JUL 13 2 58 PM '66

Oct. HARBORD
COUNTY CLERK
PER GAIL H. GREER,
CLERK

ATTEST:

William O. Whiteford
Administrative Assistant

LIBER 2 PAGE 283

ORDINANCE 6-C-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-one (61) of Harofrd County, Maryland, dated July 11, 1966, rezoning as area thereon shown, situate in the First Election District of Harford County as follows (a public hearing thereon having been held on June 7, 1966):

An area, consisting of approximately twenty-three and eighty-one hundredths acres (23.81) on the West side of Emmorton Road (Route 24) approximately 200 feet South of Singer Road and on the South side of Singer Road approximately 200 feet West of Emmorton Road (Route 24), from an "A-1" Agricultural District and a "B-1" Neighborhood Business District to an "R-3" Multi-Family Residence District and a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number Sixty-one B (61-B) of Harford County, Maryland.

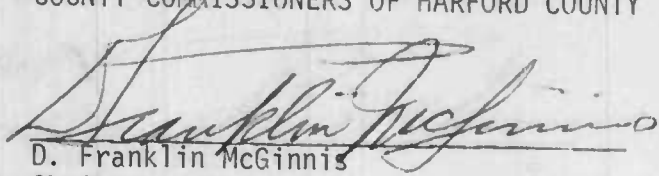
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-one (61) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District and a "B-1" Neighborhood Business District to an "R-3" Multi-Family Residence District and a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Sixty-one B (61-B) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

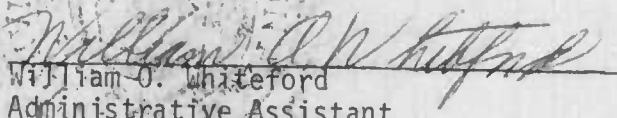
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 13th day of July, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Chairman

ATTEST:


William O. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER 283
NO. 2 FOLIO 283 ONE OF THE

JUL 13 2 58 PM '66

RECORDED HARFORD
COUNTY NO. 2 EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2

PAGE 281

ORDINANCE 6-D-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Twenty-three (23) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Fourth Election District of Harford County as follows (a public hearing thereon having been held on June 13, 1966):

An area, consisting of approximately one and one-half acres (1 1/2) at the Southwest intersection of Norrisville (Route 23) and Troyer (Route 138) Roads, fronting approximately 330 feet on the West side of Norrisville Road (Route 23) and fronting approximately 300 feet on the South side of Troyer Road (Route 138), from an "A-1" Agricultural District to a "B-1" Neighborhood Business District, said area to be so designated on Supplementary Zoning Map Number Twenty-three A (23-A) of Harford County, Maryland.

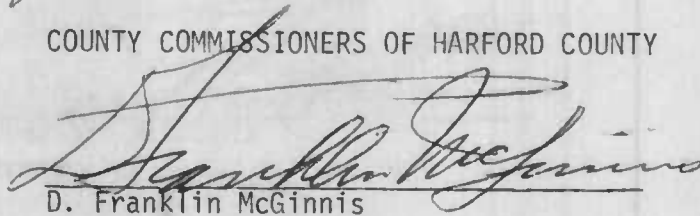
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Twenty-three (23) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to a "B-1" Neighborhood Business District; said area being designated on Supplementary Zoning Map Number Twenty-three A (23-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

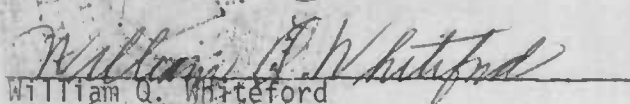
Section 2. That the Ordinance shall take effect as of the date of its passage.

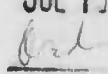
Approved this 17th day of July, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Chairman

ATTEST:


William Q. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER BR4
NO. 2 FOLIO 281 ONE OF THE
JUL 13 2 58 PM '66

HARFORD
COUNTY CLERK
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 285

ORDINANCE 6-E-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-One (41) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County as follows (a public hearing thereon having been held on June 13, 1966):

An area, consisting of lots numbers 24 to 44 inclusive and lots 68 to 88 inclusive at the Northwest intersection of Conowingo Road (Route 1) and Jarrettsville Road (County) in the Castle Blaney Subdivision, from an "R-2" Urban Residence District to a "B-3" General Business District, said area to be so designated on Supplementary Zoning Map Number Forty-one A (41-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-One (41) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "R-2" Urban Residence District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Forty-One A (41-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 13th day of July, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

D. Franklin McGinnis
D. Franklin McGinnis
Chairman

RECORDED FOR RECORD
& RECORDED IN LIBER 285
NO. 2 FOL. 285 ONE OF THE

JUL 13 2 58 PM '66

Ord.
COUNTY CLERK
PER CLERK R. GREER,
CLERK

ATTEST:

William O. Whiteford
William O. Whiteford
Administrative Assistant

LIBER 2 PAGE 286
ORDINANCE 6-F-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-Eight (58) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Second Election District of Harford County as follows (a public hearing thereon having been held on June 13, 1966):

An area consisting of approximately two (2) acres on the East side of Old Philadelphia Road (Route 7) approximately 170 feet North of Pulaski Highway (Route 40) and on the North side of Pulaski Highway (Route 40) approximately 630 feet East of Old Philadelphia Road (Route 7) from an "M-2" General Industrial District to an "M-1" Light Industrial District, said area to be so designated on Supplementary Zoning Map Number Fifty-Eight A (58-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-eight (58) of Harford County, dated July 11, 1966; be and it is hereby amended so as to rezone the area described above from an "M-2" General Industrial District to an "M-1" Light Industrial District; said area being designated on Supplementary Zoning Map Number Fifty-eight A (58-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 13th day of July, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

D. Franklin McGinnis
D. Franklin McGinnis
Chairman

ATTEST:

William D. Whiteford
William D. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED
NO. 2 FOL. 26 ONE OF THE

JUL 13 2 58 PM '66
COUNTY CLERK
PER GARY H. GREER,
CLERK

LIBER 2 PAGE 287
ORDINANCE 6-G-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-five (55) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County as follows (a public hearing thereon having been held on June 14, 1966):

An area consisting of approximately five and three-quarters acres (5 3/4) at the Southeast intersection of Bel Air (Route 1) and Mountain (Route 152) Roads, from a "B-3" General Business District and an "A-1" Agricultural District to a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number Fifty-five A (55-A) of Harford County, Maryland.

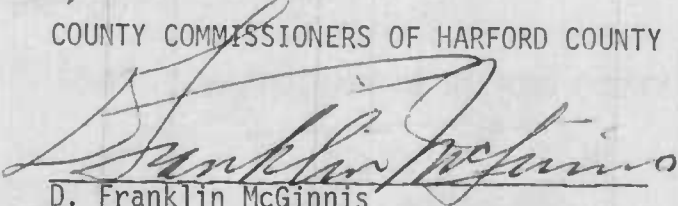
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-five (55) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from a "B-3" General Business District and an "A-1" Agricultural District to a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Fifty-five A (55-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

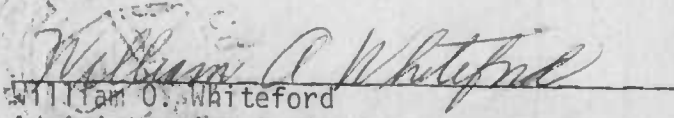
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 13th day of July, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

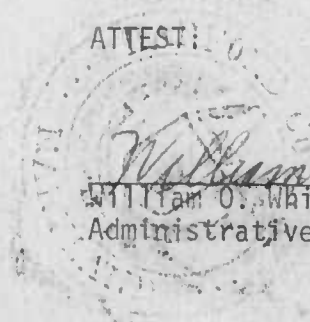

D. Franklin McGinnis
Chairman

ATTEST:


William O. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER 287
NO. 2 FOLIO 28 ONE OF THE

JUL 13 2 58 PM '66


COUNTY OF HARFORD
COUNTY CLERK
PER GAIL AND B. GREER.
CLERK

LIBER

2 PAGE 288

ORDINANCE 6-H-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Maps Numbers Forty-one (41), Forty-nine (49) and Fifty (50) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County as follows (a public hearing thereon having been held on June 14, 1966):

An area consisting of approximately two hundred and ninety-four (294) acres on the East side of Fountain Green Road (Route 543) approximately 1/4 mile South of Churchville Road (Route 22) from an "A-1" Agricultural District to an "R-2" Urban Residence District, said area to be so designated on Supplementary Zoning Maps Numbers Forty-one B (41-B), Forty-nine A (49-A) and Fifty-A (50-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Maps Numbers Forty-one (41), Forty-nine (49) and Fifty (50) dated July 11, 1966, be and they are hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "R-2" Urban Residence District; said area being designated on Supplementary Zoning Map Numbers Forty-one B (41-B), Forty-nine A (49-A) and Fifty-A (50-A) of Harford County, Maryland; the said Supplementary Zoning Maps to be considered as a part hereof as fully as if copies were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 13th day of July, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

Franklin McGinnis
D. Franklin McGinnis
Chairman

& RECORDED IN BOOK 1548

NO. 2 PAGE 288

JUL 13 2 58 PM '66

Cra
COUNTY CLERK
PER BARBARA G. GREER,
CLERK

ATTEST:

William O. Whiteford
William O. Whiteford
Administrative Assistant

LIBER 2 PAGE 289
ORDINANCE 6-I-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-six (56) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County as follows (a public hearing thereon having been held on June 28, 1966):

An area consisting of approximately three and one-half (3 1/2) acres on the West side of Emmorton Road (Route 24) approximately 1,700 feet North of Wheel Road, from an "A-1" Agricultural District to a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number Fifty-six A (56-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-six (56) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Fifty-six A (56-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 17th day of July, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

D. Franklin McGinnis
D. Franklin McGinnis
Chairman

ATTEST:

William O. Whiteford
William O. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER 289
NO. 2 FOLIO 289 ONE OF THE
JUL 13 2 58 PM '66
HARFORD COUNTY, MARYLAND
PER GARLAND H. CREER,
CLERK

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TO BE

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NOTHING INTENDED

TO BE

RECORDED ON

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LIBER

2 PAGE 290

ORDINANCE NO. 6-J-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-one (41) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County as follows (a public hearing thereon having been held on July 5, 1966):

An area consisting of approximately forty-eight (48) acres on the East side of Conowingo Road (Route 1) opposite the Bel Air By-Pass, approximately five-eighths (5/8) of a mile North of Henderson Road and approximately one and one-quarter (1 1/4) miles South of Fountain Green Road (Route 543), from an "A-1" Agricultural District to a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number forty-one C (41-C) of Harford County, Maryland.

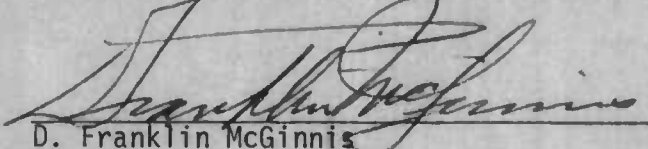
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-one (41) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Forty-one C (41-C) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

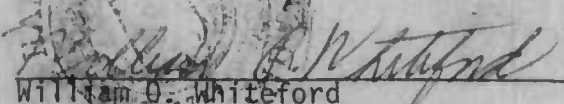
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 26th day of July, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY



D. Franklin McGinnis
Chairman

ATTEST


William D. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER 502
NO. 2 FOLIO 292 ONE OF THE

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COUNTY CLERK HARFORD
COUNTY, MD. EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 291

ORDINANCE NO. 6-K-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-one (41) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County as follows (a public hearing thereon having been held on July 5, 1966):

An area consisting of approximately forty-one and six tenths (41.6) acres on the East side of Conowingo Road (Route 1) opposite the Bel Air By-Pass, (adjacent to the Southerly and Easterly limits of the "B-2" Community Business District Zoning area approved by Ordinance 6-J-4) and being approximately one and one-quarter (1 1/4) miles South of Fountain Green Road (Route 543) and approximately 1/2 mile North of Henderson Road, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District, said area to be so designated on Supplementary Zoning Map Number Forty-one D (41-D) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-one (41) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area being designated on Supplementary Zoning Map Number Forty-One D (41-D) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 26th day of July 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

D. Franklin McGinnis
D. Franklin McGinnis
Chairman



William O. Whiteford
William O. Whiteford
Administrative Assistant

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& RECORDED IN LIBER 2 PAGE 291
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HARFORD COUNTY
PER GAIL H. GREER, CLERK

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ORDINANCE NO. 6-L-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-six (66) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on July 19, 1966):

An area consisting of approximately one hundred and sixty-five and seven tenths (165.7) acres on the North and South sides of Willoughby Beach Road, extending from Otter Point Creek to the Pennsylvania Railroad at the West intersection of Willoughby Beach and Freys Roads, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District, said area to be so designated on Supplementary Zoning Map Number Sixty-six A (66-A) of Harford County, Maryland.

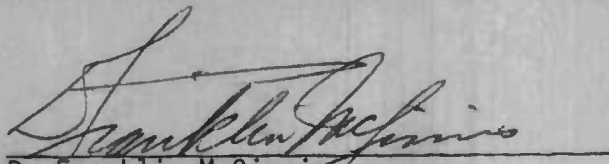
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-six (66) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area being designated on Supplementary Zoning Map Number Sixty-six A (66-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 22nd day of August, 1966.

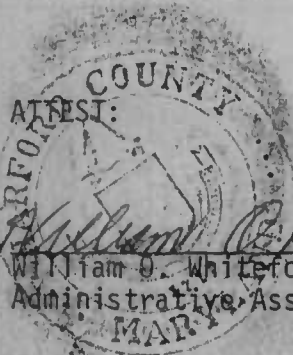
COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Chairman

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Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK



William O. Whiteford
Administrative Assistant

LIBER 2 PAGE 293
ORDINANCE NO. 18

An Ordinance to repeal and re-enact Ordinance No. 17 that defines the details and conditions for constructing or improving roads and drainage incident to said construction or improvement on or along private roads as authorized by the Code of Public Local Laws of Harford County, 1965 Edition, being Article 13 of the Code of Public Local Laws of Maryland, sub-title, "Roads and Public Works", Section 466 (f) and Section 467.

The following procedure, conditions and details shall prevail:

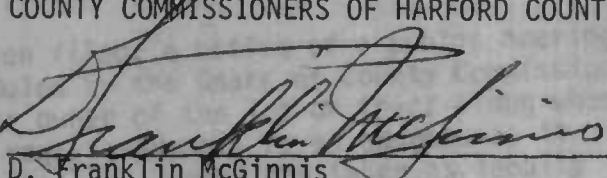
1. A majority of the abutting property owners possessing at least 51 per cent of the frontage on any road or street may petition the County for construction or reconstruction of such road or street. The abutting property owner on each side of such road or street shall pay one-half the cost of construction of such road or street abutting along his property.
2. After authentication of the petition filed, a notice of a public hearing in reference to the petition shall be scheduled by the Board of County Commissioners. Notice of such hearing shall be given to the owner of the lot or tract along whose boundaries work is required to be done, by registered mail to an address as it appears on his last tax bill. This notice shall be deemed and taken as legally sufficient and binding. Any person feeling aggrieved by the terms and conditions of such notice may be heard at such hearing. The County Commissioners after said hearing shall have the final authority to determine whether the petitioned road shall be constructed.
3. At such hearing the Director of Public Works shall inform the affected property owners of the estimated engineering costs for such project. This estimate to be tentative and subject to completion of necessary design and construction costs. Furthermore, he shall inform each property owner of his share of the cost of this improvement based on assessable frontage.
4. Prior to the commencement of the design of such project it shall be a responsibility of the petitioners to obtain all necessary rights-of-way for the petitioned improvement in compliance with the Harford County Road Code. In the event that all rights-of-way cannot be obtained the project shall be rejected and only reopened upon repetition after all rights-of-way have been obtained by the petitioners.
5. After all rights-of-way have been acquired the Director of Public Works by and with the consent of the County Commissioners may procure the performance of such work either with his own forces or by contract. Upon the completion of the project the costs and expenses of such work including the cost of giving notice, engineering and overhead shall be certified by the Director of Public Works to the County Treasurer and shall be a lien on the property in the same manner as taxes and shall be collectible in the manner provided by law for the collection of taxes except such charges and assessments are benefit charges and shall not be subject to limitations.
 - a. At the time of the transfer of any property or portion of property upon which an assessment has been levied the entire assessment shall become due and payable before such transfer may be recorded in the Office of the Clerk of the Circuit Court.
 - b. For transfers during the interim period before the road construction is complete and before the determination of the actual cost is accomplished the entire assessment shall be due and payable in full based upon the estimated assessment and cost tabulation sheet as recorded in the Office of the Clerk of the Circuit Court. This payment to be considered as payment in full for his share of the improvement. Any credit or debit which may result after construction is complete and actual costs have been determined shall be absorbed by Harford County, Maryland.

6. The County Commissioners may by appropriate order upon application provide for the payment of any assessment in annual installments not exceeding ten (10) in number. At the same time an annual interest charge of 4% shall be imposed on the unpaid balance of the assessment provided, however, that no installment payment shall be permitted unless an agreement with respect thereto has been made by the property owner with the County prior to the performance of the work.

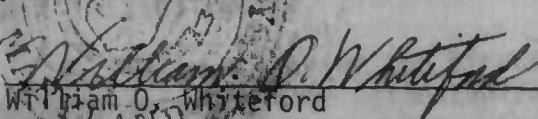
7. The Director of Public Works with the consent of the Board of County Commissioners shall determine the relative sequence of scheduling road improvements and shall have the power to recommend deferring any particular projects to another year's construction schedule if time and finances do not warrant its immediate construction.

This Ordinance shall take effect this 29th day of August, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Chairman

ATTEST:


William O. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER 294
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Orl. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

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2 PAGE 235

ORDINANCE NO. 6-M-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-eight (58) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on August 29, 1966):

An area, consisting of approximately sixteen (16) acres, beginning approximately 200 feet off the North side of Old Philadelphia Road (Route 7), approximately 2,000 feet West of Stepney Road at an approximate width of 520 feet and extending to an irregular depth varying from approximately 664 feet to 1,450 feet, from an "A-1" Agricultural District to an "M-1" Light Industrial District, said area to be so designated on Supplementary Zoning Map Number Fifty-eight B (58-B) of Harford County Maryland.

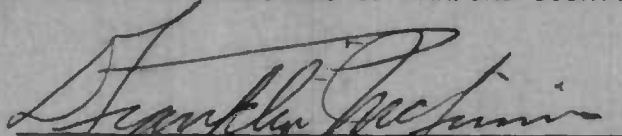
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-eight (58) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "M-1" Light Industrial District; said area being designated on Supplementary Zoning Map Number Fifty-eight B (58-B) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

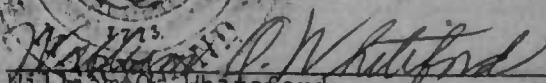
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 20th day of September, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

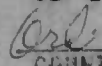

D. Franklin McGinnis
Chairman




William O. Whiteford
Administrative Assistant

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 RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

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2 PAGE 296

ORDINANCE NO. 6-N-4

(Amendment of the Zoning Ordinance)

An Ordinance to amend the provisions of Ordinance No. 6, (the December 5, 1957 Edition of the Harford County Zoning Ordinance) by adding, deleting, modifying, enacting, re-enacting or adopting certain provisions of the Zoning Ordinance where applicable insofar as pertaining to junk yard regulations and disposal dumps, as follows (a public hearing thereon having been held on May 31, 1966):

BE IT ENACTED AND ORDAINED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY

Section 1 That Ordinance No. 6, the Harford County Zoning Ordinance be, and it is hereby amended by the addition of a new paragraph as follows to be known as Section 4.14-A under ARTICLE 4--DEFINITIONS:

DUMP: A public owned or operated area as a sanitary landfill where refuse trash or garbage is deposited.

Section 2 By deleting the following definition of a JUNK YARD as originally adopted in Section 4.21 of said Ordinance: Any area where waste, discarded or salvaged materials are bought, sold, exchanged, baled, packed, stored, disassembled or handled, including auto wrecking yards, house wrecking yards, used lumber yards and places or yards for storage of salvaged house wrecking and structural steel materials and equipment; but not including areas where such uses are conducted entirely within a completely enclosed building, and not including pawn shops and establishments for the sale, purchase or storage of used furniture and household equipment, used cars in operable condition, salvaged machinery and the processing of used, discarded or salvaged materials as part of manufacturing operations; and enacting a new definition in lieu thereof, as follows:

4.21 JUNK YARD: Any area where waste discarded or salvaged materials are bought, sold, exchanged, baled, packed, stored, disassembled or handled, including auto wrecking yards, house wrecking yards, used lumber yards and places or yards for storage of salvaged house wrecking and structural steel materials and equipment; but not including areas where such uses are conducted entirely within a completely enclosed building, and not including pawn shops and establishments for the sale, purchase or storage of used furniture and household equipment if stored inside, used cars in operable condition, salvaged machinery and the processing of used, discarded or salvaged materials as part of manufacturing operations.

Section 3 By re-enacting the following provision as originally adopted as Section 7.0211 under Section 7.02. CONDITIONAL USES, REQUIRING BOARD AUTHORIZATION OF ARTICLE 7--"A-1" AGRICULTURAL DISTRICT

7.0211 Disposal of garbage or refuse by the County, or a municipality thereof, subject to the provisions of Section 20.452, provided that it shall comply with three times the requirements of subsection 7.041.

Section 4 By deleting the following provision as Principal Permitted Uses, as originally adopted as Section 11.015 of said Ordinance under Section 11.01 PRINCIPAL PERMITTED USES of ARTICLE 11--"B-1" NEIGHBORHOOD BUSINESS DISTRICT: Automobile filling stations, minor repair and storage garages, and commercial parking lots for passenger vehicles, except as provided in Section 16.04; and enacting a modified provision in lieu thereof, as follows:

11.015 Automobile filling stations, minor repair and storage garages including the parking and storing of vehicles resulting from towing services authorized by private and-or police action irrespective of the condition of said automobiles, provided that the storage area is properly screened and maintained so the stored vehicles are not visible from the road and adjoining properties, or located in the most possible remote area of the premises and screened from adjoining residential properties and provided further that in no case shall said vehicles be stored or parked longer than 90 days; and commercial parking lots for passenger vehicles, except as provided in Section 16.04.

Section 5 By re-enacting the following provision as originally adopted as Section 12.011 under Section 12.01--PRINCIPAL PERMITTED USES of ARTICLE 12--"B-2" COMMUNITY BUSINESS DISTRICT

12.011 Any use or structure permitted and as regulated in the "B-1" District, except as hereinafter modified.

Section 6 By re-enacting the following provision as originally adopted as Section 13.011 under Section 13.01 --PRINCIPAL PERMITTED USES of ARTICLE 13--"B-3" GENERAL BUSINESS DISTRICT

13.011 Any use or structure permitted and as regulated in the "B-2" District except as hereinafter modified:

Section 7 By re-enacting the following provisions as originally adopted as Section 14.011 under Section 14.01--PRINCIPAL PERMITTED USES of ARTICLE 14--"M-1" LIGHT INDUSTRIAL DISTRICT.

14.011 Any use permitted and as regulated in the "B-3" District.

Section 8 By deleting the following provision as originally adopted as a part of Section 15.02 of said Ordinance under Section 15.02 CONDITIONAL USES REQUIRING BOARD AUTHORIZATION of ARTICLE 15--"M-2" GENERAL INDUSTRIAL DISTRICT Junk Yards. (The County Commissioners shall retain jurisdiction over all junk yards in existence on the effective date of this Ordinance, as provided in Section 566 of Article 27 of the Annotated Code of Maryland; the provisions of this Ordinance shall be effective in regard to all new applications for junk yards.) and enacting a modified provision in lieu thereof, as follows: Junk Yards

Section 9 By re-enacting the following provision as originally adopted as a part of Section 15.02 of said Ordinance under Section 15.02 CONDITIONAL USES, REQUIRING BOARD AUTHORIZATION of ARTICLE 15--"M-2" GENERAL INDUSTRIAL DISTRICT:

Storage, drying, cleaning of iron, junk, rags, glass, cloth, paper or clipping, including sorting, refining, baling, wool pulling and scouring.

Section 10 By deleting the following provision as originally adopted as a part of Section 15.05 REQUIRED CONDITIONS of ARTICLE 15--"M-2" GENERAL INDUSTRIAL DISTRICT.

15.053 All Junk Yards shall be enclosed by a solid board fence or wall not less than six (6) feet high.

and enacting the added provision in lieu thereof, as follows:

15.053 Junk Yards:

A. STACKING: Vehicles, and other materials shall not be stacked or piled so as to be visible from roads or adjoining properties.

B. PROXIMITY OF STREAMS: The Junk Yard shall be maintained in accordance with the rules and regulations of other agencies having proper jurisdiction.

C. FIRE HAZARDS: No materials or refuse shall be collected, accumulated, or stored thereon in such a manner that the same shall constitute a fire hazard to the general public. Adequate fire lanes shall be provided and maintained at all times.

D. BURNING: Burning of Junk shall be controlled so as to prevent objectionable odor, smoke, or air pollution beyond the lot, and adequate safeguards shall be provided to prevent any health hazard. In no case shall there be any burning within 500 feet of an occupied residence, except that of the owner of the junk yard.

E. LOT LINES: No materials or refuse shall be collected, accumulated or stored upon said land visible to adjoining properties or roads.

F. NUISANCE: The same shall be conducted in such manner that the junk yard shall not become a public nuisance.

G. PERMITS: The proprietor thereof shall have obtained a permit and license therefor, from the County Commissioners, which shall be issued annually at a cost of \$10.00. In making original application for each permit and licenses, there shall be submitted therewith a plot plan for the premises for which the permit and license is sought, showing metes and bounds, courses and distances of said premises. The plat plan shall be retained by the County Commissioners and shall be used for renewals of said permit and license.

H. The lot or parcel proposed for such use is at least ten (10) acres in area and is at least 300 feet from any land in any residential or commercial use.

I. No storage of junk shall be permitted within fifty (50) feet of any bounding lot line or within one hundred (100) feet of any bounding road or street line.

J. Any natural screening (trees, bushes, ridges, etc.) between the fifty and one hundred foot setback lines provided for in (I) shall be maintained and any areas visible from the highway or adjacent property shall be screened by a wall, fence, or plant material, and be properly maintained at all times to effectively serve its purpose as a screen.

K. Off-street parking shall be provided as follows:

1. Number: Adequate off-street parking spaces to meet the needs of the trade but not less than 10 (10) spaces.

2. Dimensions: Each automobile off-street parking space shall be not less than nine (9) feet in width and twenty (20) feet in depth.

3. Driveways: Adequate interior driveways and access driveways shall be provided to connect parking spaces with a road, highway, street or alley.

4. Surfacing and Drainage: Each parking area accommodating five (5) or more vehicles ~~and~~ shall have a stabilized surface to render it reasonable erosion resistant and dust free and shall be graded and drained so as to prevent damage to abutting property and to public streets.

Section 11 By deleting the following provision as originally adopted as Section 19.1--ENFORCEMENT BY THE ZONING INSPECTOR of Article 19--ENFORCEMENT:

19.1 ENFORCEMENT BY THE ZONING INSPECTOR. There is hereby established the office of Zoning Inspector. It shall be the duty of the Zoning Inspector to enforce this Ordinance in accordance with its administrative provisions. All departments, officials and public employees of Harford County which are vested with the duty or authority to issue permits or licenses, shall conform to the provisions of this Ordinance and shall issue no permit or license for any use, building or purpose, if the same would be in conflict with the provisions of this Ordinance. Any permit or license, issued in conflict with the provisions of this Ordinance, shall be null and void.

and enacting a modified provision in lieu thereof as follows:

19.1 ENFORCEMENT BY THE ZONING INSPECTOR. There is hereby established the office of Zoning Inspector. It shall be the duty of the Zoning Inspector to enforce this Ordinance in accordance with its administrative provisions. All departments, officials and public employees of Harford County which are vested with the duty or authority to issue permits or licenses, shall conform to the provisions of this Ordinance and shall issue no permit or license for any use, building or purpose, if the same would be in conflict with the provisions of this Ordinance. The Zoning Inspector shall enforce all Junk Yard Violations. Any permit or license, issued in conflict with the provisions of this Ordinance, shall be null and void.

Section 12 By re-enacting the following provision as originally adopted as Section 19.21 of 19.2--ZONING CERTIFICATE under ARTICLE 19 ENFORCEMENT.

19.21 It shall be unlawful for an owner to use or to permit the use of any building or land or part thereof, hereafter created, erected, changed, converted or enlarged, wholly or partly, except for agricultural purposes and purposes incident thereto on the same land, until a Zoning Certificate shall have been issued by the Zoning Inspector, except as provided in Section 19.24.

Such Zoning Certificate shall show that such building or premises or part thereof, and the proposed use thereof, are in conformity with the provisions of this Ordinance. It shall be the duty of the Zoning Inspector to issue a Zoning Certificate provided he is satisfied that the building or premises and the proposed use thereof conform with all the requirements of this Ordinance. No permit for excavation or construction shall be issued by the Zoning Inspector unless the plans, specifications, and the intended use conform to the provisions of this Ordinance.

and enacting a modified provision in lieu thereof as follows:

19.21 It shall be unlawful for an owner to use or to permit the use of any building or land or part thereof, hereafter created, erected, changed, converted or enlarged, wholly or partly, except for agricultural purposes and purposes incident thereto on the same land, until a Zoning Certificate shall have been issued by the Zoning Inspector, except as provided in Section 19.24. A Zoning Certificate is required before a Junk Yard can be established. Such Zoning Certificate shall show that such building or premises or part thereof, and the proposed use thereof, are in conformity with the provisions of this Ordinance. It shall be the duty of the Zoning Inspector to issue a Zoning Certificate provided he is satisfied that the building or premises and the proposed use thereof conform with all the requirements of this Ordinance. No permit for excavation or construction shall be issued by the Zoning Inspector unless the plans, specifications, and the intended use conform to the provisions of this Ordinance.

Section 13 By deleting the following provision as originally adopted as Section 19.3--FILING PLANS of ARTICLE 19--ENFORCEMENT:

19.3 FILING PLANS. Every application for a Zoning Certificate shall be accompanied by plans, drawn to scale, showing the actual shape and dimensions of the lot to be built upon or to be changed in its use, in whole or in part; the exact location, size and height or any building or structure to be erected or altered; the existing and intended use of each building or structure or part thereof; the number of families or housekeeping units the building is designed to accommodate; and, when no buildings are involved, the location of the present use and proposed use to be made of the lot, and such other information with regard to the lot and neighboring lots as may be necessary to determine and

provide for the enforcement of this Ordinance. All dimensions shown on these plans relating to the location and size of the lot to be built upon, shall be based on actual survey. The lot and the location of the building thereon shall be staked out on the ground before construction is started.

In every case where the lot is not provided and is not proposed to be provided with public water supply and/or the disposal of sanitary wastes by means of public sewers, the application shall be accompanied by a Certificate of Approval by the Health Officer of Harford County of the proposed method of water supply and/or disposal of sanitary wastes.

and enacting a modified provision in lieu thereof, as follows:

19.3 FILING PLANS. Every application for a Zoning Certificate including a Junk Yard shall be accompanied by plans, drawn to scale, showing the actual shape and dimensions of the lot to be built upon or to be changed in its use, in whole or in part; the exact location, size and height of any building or structure to be erected or altered; the existing and intended use of each building or structure or part thereof; the number of families or housekeeping units the building is designed to accommodate; and, when no buildings are involved, the location of the present use and proposed use to be made of the lot, and such other information with regard to the lot and neighboring lots as may be necessary to determine and provide for the enforcement of this Ordinance. All dimensions shown on these plans relating to the location and size of the lot to be built upon, shall be based on actual survey. The lot and the location of the building thereon shall be staked out on the ground before construction is started.

In every case where the lot is not provided and is not proposed to be provided with public water supply and/or the disposal of sanitary wastes by means of public sewers, the application shall be accompanied by a Certificate of Approval by the Health Officer of Harford County of the proposed method of water supply and/or disposal of sanitary wastes.

Section 14 By deleting the following provision as originally adopted as Section 19.4--VIOLATIONS AND PENALTIES of ARTICLE 19--ENFORCEMENT:

19.4 VIOLATIONS AND PENALTIES. It shall be unlawful to locate, erect, construct, reconstruct, enlarge, change, maintain or use, any building or land

in violation of any regulation in or any provisions of this Ordinance, or any amendment or supplement thereto lawfully adopted by the Board of County Commissioners of Harford County; or fail to comply with any reasonable requirement or condition imposed by the Board of Appeals. Any person, firm or corporation, violating any regulation in or any provision of this Ordinance or of any amendment or supplement thereto, shall be deemed guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one hundred (100) dollars. Each and every day during which such illegal location, erection, construction, reconstruction, enlargement, change, maintenance or use continues, may be deemed a separate offense.

and enacting a modified provision in lieu thereof as follows:

19.4. VIOLATIONS AND PENALTIES. It shall be unlawful to locate, erect, construct, reconstruct, enlarge, change, maintain or use, any building or land in violation of any regulation in or any provisions of this Ordinance, or any amendment or supplement thereto lawfully adopted by the Board of County Commissioners of Harford County; or fail to comply with any reasonable requirement or condition imposed by the Board of Appeals. Any person, firm or corporation, violating any regulation in or any provision of this Ordinance or of any amendment or supplement thereto, shall be deemed guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one hundred (100) dollars except in the case of a Junk Yard violation when convicted the fine shall not be less than \$25. Each and every day during which such illegal location, erection, construction, reconstruction, enlargement, change, maintenance or use continues, may be deemed a separate offense.


Section 15 By re-enacting the following provision as originally adopted as Paragraph 2 of Sub-Section 20.452--SPECIFIC of Section 20.45--CONDITIONAL USES AND SPECIAL EXCEPTIONS of ARTICLE 20--BOARD OF APPEALS

(2) Within any "A" or "M" District, the disposal of garbage or refuse by the County, or a municipality or agents thereof.


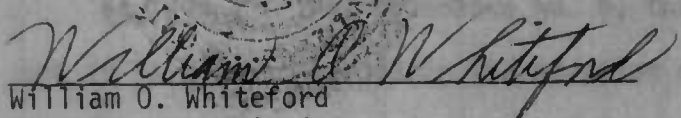
Section 16 That this Ordinance shall take effect as of the date of its passage.

Approved this 10th day of October, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Chairman

ATTEST:



William O. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER 694
NO. 2 FOLIO 296 ONE OF THE

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Ord RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 305

ORDINANCE NO. 6-0-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty (40) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on October 17, 1966):

An area consisting of approximately thirty-six (36) acres on the North side of Red Pump Road, approximately 3/4 mile West of Rock Spring Road (Route 24), from an "A-1" Agricultural District to an "R-2" Urban Residence District, said area to be so designated on Supplementary Zoning Map Number Forty-A (40-A) of Harford County, Maryland.

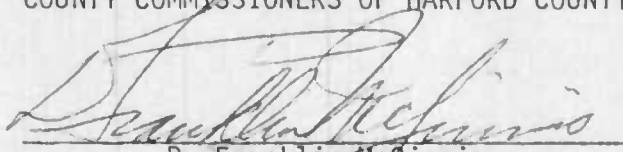
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty (40) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "R-2" Urban Residence District; said area being designated on Supplementary Zoning Map Number Forty-A (40-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

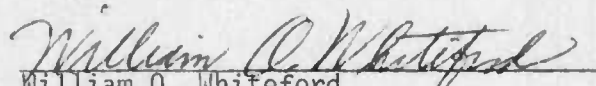
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 6th day of December, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Chairman

ATTEST:


William O. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER
NO. 305 OF THE

Dec 7 2 59 PM '66
CLERK
HARFORD COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER 2 PAGE 306

ORDINANCE NO. 6-P-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-two (42) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on November 29, 1966).

An area, consisting of approximately thirty (30) acres on the North side of Churchville Road (Route 22) approximately 2,300 feet East of Thomas Run Road, adjacent in part to the easterly property line of the Harford Junior College and continuing in an easterly direction paralleling the Churchville Road (Route 22) for a distance of approximately 2,216 feet and extending in depth to 600 feet from an "A-1" Agricultural District to a "B-2" Community Business District; said area to be so designated on Supplementary Zoning Map Number Forty-two A (42-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-two (42) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Forty-two A (42-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

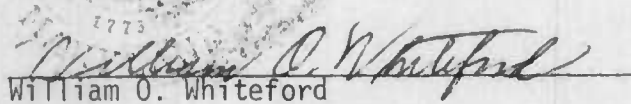
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 6th day of December, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnis
Chairman

ATTEST:


William O. Whiteford
Administrative Assistant

RECEIVED FOR RECORD
& RECORDED IN LIBER
NOV 20 1966

DEC 7 3 00 PM '66
CLERK
HARFORD COUNTY, MD. & EXAMINED
PER CARLAND R. GREER,
CLERK

Ordinance No. 6-Q-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-five (55) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on December 13, 1966):

An area, consisting of approximately four and two tenths (4.2) acres in the area of the Southeast quadrant of Mountain Road (Route 152) and Bel Air Road (Route 1) beginning approximately 425 feet off the East side of Mountain Road (Route 152); from an "A-1" Agricultural District to a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number Fifty-five B (55-B) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-five (55) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Fifty-five B (55-B) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 27th day of December, 1966.


William C. Whiteford
William C. Whiteford
Administrative Assistant

COUNTY COMMISSIONERS OF HARFORD COUNTY

D. Franklin McGinnis
D. Franklin McGinnis
Chairman

DEC 28 11 16 AM '66

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CLERK

1966 2 393

ORDINANCE NO. 6-R-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-five (65) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on December 20, 1966):

An area, consisting of approximately one hundred and thirty (130) acres on the North and South sides of Hanson Road approximately one (1) mile West of Edgewood Road (Route 24), from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District, said area to be so designated on Supplementary Zoning Map Number Sixty-five A (65-A) of Harford County, Maryland.

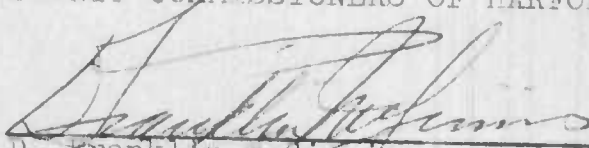
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-five (65) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area being designated on Supplementary Zoning Map Number Sixty-five A (65-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 27th day of December, 1966.


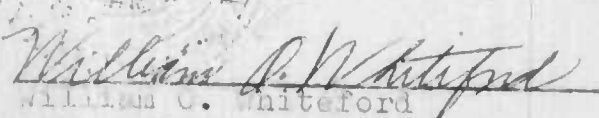
COUNTY COMMISSIONERS OF HARFORD COUNTY


D. Franklin McGinnys
Chairman

RECEIVED FOR RECORD
& RECORDED IN LIBER. 114
NO. 2, 302 OF THE

DEC 28 11 16 AM '66

RECORDED IN HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK



William C. Whiteford
Administrative Assistant

LIBER

2-1-303

ORDINANCE NO. 6-S-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Numbers Sixty-five (65) and Sixty-six (66) of Harford County, Maryland, dated July 11, 1966, rezoning areas thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on December 20, 1966):

An area, totalling approximately seven hundred and seventy-six and one half (776½) acres consisting of five parcels as follows:

Parcel #1 - approximately one hundred and ninety-nine and one tenth (199.1) acres beginning approximately 200 feet off the West side of Edgewood Road (Route 24) approximately 400 feet South of Pulaski Highway (Route 40) from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District.

Parcel #2 - approximately thirty-six and three tenths (36.3) acres beginning approximately 200 feet East of Edgewood Road (Route 24) and approximately 1,200 feet South of Pulaski Highway (Route 40) from an "R-1" Suburban Residence District to an "R-3" Multi-Family Residence District.

Parcel #3 - approximately three hundred and seventy four and two tenths (374.2) acres beginning approximately 1,500 feet East of Edgewood Road (Route 24) and approximately 400 feet South of Pulaski Highway (Route 40) and being contiguous to Parcel #2; from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District.

Parcel #4 - approximately one hundred and eight tenths (108.3) acres North side of Willoughby Beach Road approximately 2,200 feet East of Edgewood Road (Route 24) and being contiguous to Parcel #3; from an "R-2" Urban Residence District to an "R-3" Multi-Family Residence District.

Parcel #5 - approximately sixty-six and one tenth (66.1) acres North and South sides of Willoughby Beach Road approximately ¾ mile from Freys Road from an "R-2" Urban Residence District to an "R-3" Multi-Family Residence District,

LIBER 2 319

said areas to be so designated on Supplementary Zoning Map Numbers Sixty-five B (65-B) and Sixty-six B (66-B) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Numbers Sixty-five (65) and Sixty-six (66) of Harford County dated July 11, 1966, be and they are hereby amended so as to rezone the areas described above as follows:

Parcel #1 from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District.

Parcel #2 from an "R-1" Suburban Residence District to an "R-3" Multi-Family Residence District.

Parcel #3 from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District.

Parcel #4 from an "R-2" Urban Residence District to an "R-3" Multi-Family Residence District.

Parcel #5 from an "R-2" Urban Residence District to an "R-3" Multi-Family Residence District,

said areas being designated on Supplementary Zoning Maps Numbers Sixty-five B (65-B) and Sixty-six B (66-B) of Harford County, Maryland; the said Supplementary Zoning Maps to be considered as a part hereof as fully as if copies were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 27th day of December, 1966.

COUNTY COMMISSIONERS OF HARFORD COUNTY

D. Franklin McGinnis
D. Franklin McGinnis
Chairman

RECEIVED FOR RECORD
& RECORDED IN LIBER 284
NO. 2 PAGE 309 OF THE

DEC 28 11 16 AM '66

RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

ATTEST:

William O. Whiteford
William O. Whiteford
Administrative Assistant

ORDINANCE NO. 6-V-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty (40) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on May 9, 1967):

An area, consisting of approximately eleven (11) acres on the West side of Rock Spring Road (Route 24) approximately 600 feet North of Red Pump Road, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District, said area to be so designated on Supplementary Zoning Map Number Forty C (40-C) of Harford County, Maryland.

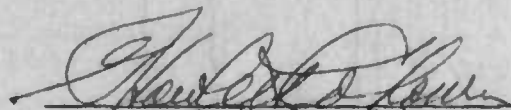
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty (40) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area being designated on Supplementary Zoning Map Number Forty C (40-C) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

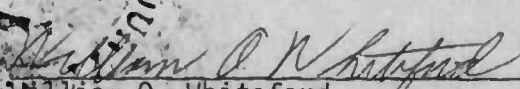
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 12th day of June, 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY



G. Howlett Cobourn
Chairman




William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 158
NO. 3 OF THE

JUN 15 9 11 AM '67

 RECORDED HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

2 312
ORDINANCE NO. 6-W-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Ordinance No. 6, being the Harford County Zoning Ordinance, by modifying Section 20.462--Non-Conforming Use of Article 20--Board of Appeals (a public hearing thereon having been held on May 15, 1967) by striking out the last six (6) lines thereof as follows:

"undertaken within four (4) years after December 5, 1962, or within four (4) years from the date when the use of the building becomes non-conforming, whichever is the least restrictive requirement, except in cases when 35% extensions were authorized by the Board during the five year period from December 5, 1957 to December 5, 1962, inclusive."

and in lieu thereof, insert the following which reads:

"undertaken within two (2) years from the date when the use of the building becomes non-conforming, whichever is the least restrictive requirement, except in cases where 35% extensions were authorized by the Board during the five (5) year period from December 5, 1957 to December 5, 1962 or the four (4) year period from December 5, 1962 to December 5, 1966, inclusive."

BE IT ENACTED AND ORDAINED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Ordinance No. 6, the Harford County Zoning Ordinance be, and it is hereby amended by modifying Section 20.462--Non-Conforming Uses of Article 20--Board of Appeals, by striking out the last six (6) lines thereof, as follows:

"undertaken within four (4) years after December 5, 1962, or within four (4) years from the date when the use of the building becomes non-conforming, whichever is the least restrictive requirement, except in cases when 35% extensions were authorized by the Board during the five (5) year period from December 5, 1957 to December 5, 1962, inclusive."

and in lieu thereof, insert the following:

"undertaken within two (2) years after the date of December 5, 1966, or within two (2) years from the date when the use of the building becomes non-conforming, whichever is the least restrictive requirement, except in cases where 35% extensions were authorized by the Board during the five

ORDINANCE NO. 6-W-4

Page 2

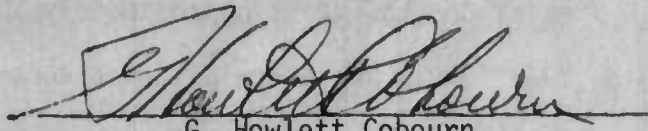
(5) year period from December 5, 1957 to December 5, 1962, or the four

(4) year period from December 5, 1962 to December 5, 1966, inclusive."

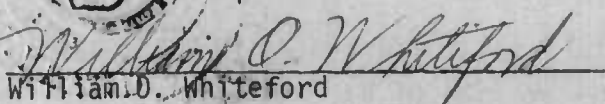
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 12th day of June, 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman




William D. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 313
NO. 2, 3/2 LINE OF THE

JUN 15 9 11 AM '67

CRD RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

1967 2-14-67
ORDINANCE NO. 6-T-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Thirty-two (32) of Harford County, Maryland, dated July 11, 1966, rezoning as area thereon shown, situate in the Fourth Election District of Harford County, as follows (a public hearing thereon having been held on May 8, 1967):

An area, consisting of approximately one and two-thirds (1 2/3) acres, on the North side of Cooptown Road, approximately 250 feet East of Jarrettsville Road, from an "R-2" Urban Residence District to a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number Thirty-two A (32-A) of Harford County, Maryland.


BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Thirty-two (32) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "R-2" Urban Residence District to a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Thirty-two A (32-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

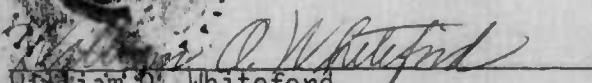
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 12th day of June, 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman




William D. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 122
NO. 2 FOR 3/4 OF THE

JUN 15 9 11 AM '67

Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LHCN 2-315
ORDINANCE NO. 6-U-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Thirty-two (32) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Fourth Election District of Harford County, as follows (a public hearing thereon having been held on May 8, 1967):

An area, consisting of approximately three-eighths (3/8) of an acre, beginning approximately 200 feet off the South side of Norrisville Road (Route 23) approximately 1,000 feet West of Baldwin Mill Road (Route 165) in Jarrettsville, from an "R-2" Urban Residence District to a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number Thirty-two B (32-B) of Harford County, Maryland.

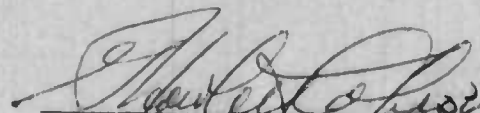
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Thirty-two (32) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "R-2" Urban Residence District to a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Thirty-two B (32-B) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

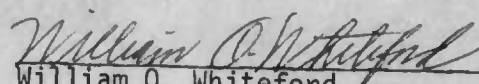
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 12th day of June 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Coburn
Chairman

ATTEST:


William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBRARY
NO. 2 FOLIO 315 OF THE

JUN 15 9 12 AM '67

RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER 2 PAGE 316

ORDINANCE NO. 6-X-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-one (41) of Harford County, Maryland dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on June 12, 1967):

An area, consisting of approximately five and one-third (5 1/3) acres at the Northwest quadrant of Conowingo Road (Route 1) and Underwood Lane, from an "R-2" Urban Residence District to a "B-3" General Business District, said area to be so designated on Supplementary Zoning Map Number Forty-one E (41-E) of Harford County, Maryland.

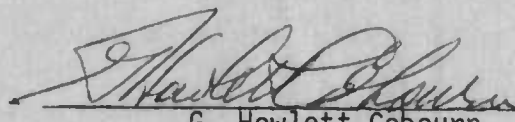
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-one (41) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "R-2" Urban Residence District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Forty-one E (41-E) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

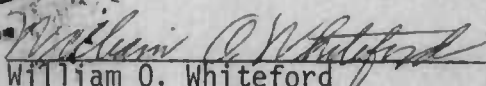
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 12th day of June, 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY



G. Howlett Cobourn
Chairman

ATTEST:


William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 2
NO. 2 FOLIO 316 OF THE

JUN 15 9 12 AM '67

 RECORDED HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 317

ORDINANCE NO. 6-Y-4

Amendment of the Harford County Zoning Ordinance

An Ordinance to Zoning Maps Numbers Sixty-three (63), sixty-six (66) and sixty-seven (67) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Second Election District of Harford County, as follows (a public hearing thereon having been held on June 19, 1967):

An area, consisting of approximately seven hundred and nine and two tenths (709.2) acres, in part being on the East side of Bush River Neck Road (also known as the Old Baltimore Road); and then easterly to the westerly side of the Aberdeen Proving Grounds; and extending from the westerly side of said Bush River Neck Road to Bush River; and extending from the southerly side of the Pennsylvania Railroad and/or Bush River Road to the Lands of Harford County and Sod Run, from an "A-1" Agricultural District to an "M-2" General Business District, said area to be so designated on Supplementary Zoning Maps Numbers sixty-three A (63-A), sixty-six C (66-C) and sixty-seven A (67-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Maps Numbers sixty-three (63), sixty-six (66) and sixty-seven (67), dated July 11, 1966, be and they are hereby amended so as to rezone the area described above, from an "A-1" Agricultural District to an "M-2" General Business District; said area being designated on Supplementary Zoning Maps Numbers sixty-three A (63-A), sixty-six C (66-C) and sixty-seven A (67-A) of Harford County, Maryland; the said Supplementary Zoning Maps to be considered as a part hereof as fully as if copies were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 3rd day of July, 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY

RECEIVED FOR RECORD
& RECORDED IN LIBER 2
NO. 317

JUL 5 11 08 AM '67

Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

John H. O'Neill
John H. O'Neill
Vice Chairman



William O. Whiteford
William O. Whiteford
Director of Administration

LIBER

2 PAGE 318

ORDINANCE NO. 6-Z-4

AMENDMENT OF THE HARFORD COUNTY ZONING ORDINANCE

An Ordinance to amend Zoning Map Number Sixty-five (65) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on June 12, 1967):

An area, consisting of approximately eighty-five (85) acres on the South side of Hanson Road, approximately 3,500 feet West of Edgewood Road (Route 24), from an "A-1" Agricultural District and an "R-2" Urban Residence District to an "R-3" Multi-family Residence District, said area to be so designated on Supplementary Zoning Map Number Sixty-five C (65-C) of Harford County, Maryland.

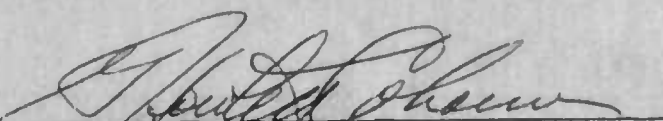
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

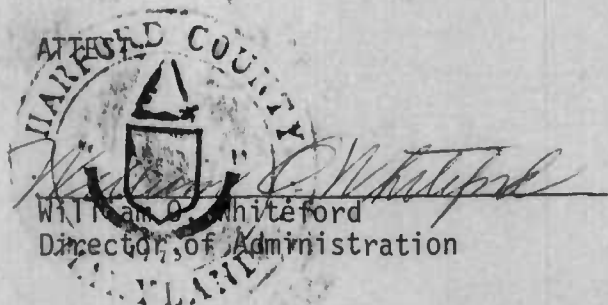
Section 1. That Zoning Map Number Sixty-five (65) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "A-1" Agricultural District and an "R-2" Urban Residence District to an "R-3" Multi-Family Residence District; said area being designated on Supplementary Zoning Map Number Sixty-five C (65 C) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 10th day of July , 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman



RECEIVED FOR RECORD
& RECORDED IN LIBER 482
NO. 2 PAGE 318 OF THE

JUL 11 3 02 PM '67

Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER 2 PAGE 319
RESOLUTION

OF THE BOARD OF COUNTY COMMISSIONERS OF HARFORD COUNTY ADOPTING AMENDMENTS TO THE HARFORD COUNTY ROAD CODE AND STANDARD SPECIFICATIONS.

WHEREAS, the Harford County Road Code and Standard Specifications were adopted by the Board of County Commissioners by Resolution on December 21st, 1965 and placed into effect January 1, 1966 and, WHEREAS, pursuant to the powers and authorities vested in the County Commissioners of Harford County under Article 13 of the Code of Public Local Law of Maryland title "Harford County" sub-title "Roads" Section 441 (e) provisions for regulation of design and construction of roads in Harford County, but to exclude areas within incorporated towns within the limits of Harford County.

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF HARFORD COUNTY THAT THE FOLLOWING PARAGRAPHS BE ADDED TO THE HARFORD COUNTY ROAD CODE AND STANDARD SPECIFICATIONS:

I.

Sec. 100-11. Classification and minimum requirements.

- (E) In the construction of all cul-de-sacs, concrete curbs and gutters will be required on the curved portions of the extremities to begin at the point of curvature and to extend to the point of tangency.

II.

Sec. 100-13. Applications for grading and construction permits.

- (e) Before any road, sidewalk, curb and gutter, or drainage project may be begun on a road or within the boundaries of a dedication to public use, the applicant for a permit to undertake any such project shall pay to the County four percent (4%) of the estimated cost of such project as determined by the Director, as an inspection and engineering fee. In determining estimated cost, the Director shall use average costs submitted on recent bids received by the County for comparable work.

The effective date of these amendments to be September 11, 1967.



RECEIVED FOR RECORD
& RECORDED IN LIBER 2
NO. 2 FOR 319 ONE OF THE

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COUNTY COMMISSIONERS OF HARFORD COUNTY

G. Howlett Cobourn, Chairman

William O. Whiteford
Director of Administration

Frederick B. Baldwin

DATE: Sept 14, 1967

John H. O'Neill

NOTHING INTENDED

TO BE RECORDED

ON THIS PAGE

LIBER

2 PAGE 318-A

ORDINANCE NO. 6-A-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-three (43) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Second Election District of Harford County, as follows (a public hearing thereon having been held on August 14, 1967):

An area consisting of approximately nine and one-half (9 1/2) acres on the North side of Level Road (Route 155) on the East and West sides of Foxridge Drive leading into the Foxridge Subdivision, from an "A-1" Agricultural District to an "B-1" Neighborhood Business District, said area to be so designated on Supplementary Zoning Map Number Forty-three A (43-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-three (43) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-1" Neighborhood Business District; said area being designated on Supplementary Zoning Map Number Forty-three A (43-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 24th day of September, 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY



ATTEST:

William O. Whiteford
Director of Administration

G. Howlett Cobourn
Chairman

RECEIVED FOR RECORD
SEP 28 11 03 AM '67

ORDINANCE NO. 6-B-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-two (62) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on July 31, 1967):

An area, consisting of approximately two hundred and one and a quarter (201 1/4) acres, beginning in varied depths ranging from 250 feet to 600 feet off the South side of Pulaski Highway (Route 40) and 200 feet to 300 feet off the East and West sides of Long Bar Harbor Road and extending from Bush River to Abingdon Beach Road, from an "R-2" Urban Residence District and a "B-3" General Business District to an "R-3" Multi-Family Residence District and a "B-3" General Business District, said area to be so designated on Supplementary Zoning Map Number Sixty-two A (62-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-two (62) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "R-2" Urban Residence District and a "B-3" General Business District to an "R-3" Multi-Family Residence District and a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Sixty-two A (62-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 24th day of September, 1967.

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& RECORDED IN LIBER 220 OF THE

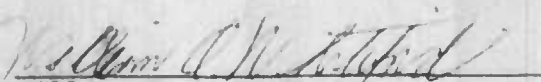
SEP 28 11 03 AM '67

CLERK OF HARFORD
COUNTY, MD. & EXAMINED
BY GARLAND R. GREER,
CLERK

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman

ATTEST:


William O. Whiteford
Director of Administration

LIBER

2 PAGE 321

ORDINANCE NO. 6-C-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Maps Numbers Fifty-six (56), Fifty-seven (57), Sixty-one (61), and Sixty-two (62) of Harford County Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on September 11, 1967):

An area consisting of approximately five hundred and eighty-two (582) acres on the East side of Emmorton Road (Route 24), North and South sides of Abingdon Road and North of Woodsdale Road and the Route 24 interchange of the John F. Kennedy Memorial Highway (I-95), from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District "B-1" Neighborhood Business District and a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Maps Numbers Fifty-six B (56-B), Fifty-seven A (57-A), Sixty-one C (61-C) and Sixty-two B (62-B) of Harford County, Maryland.

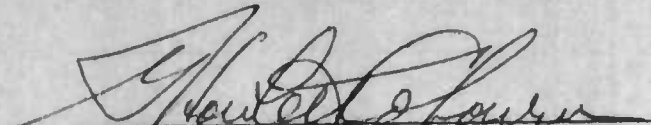
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Maps Numbers Fifty-six (56), Fifty-seven (57), Sixty-one (61) and Sixty-two (62) of Harford County, dated July 11, 1966, be and they are hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District, "B-1" Neighborhood Business District and a "B-2" Community Business District; said area being designated on Supplementary Zoning Maps numbers Fifty-six B (56-B), Fifty-seven A (57-A), sixty-one C (61-C) and Sixty-two B (62-B) of Harford County, Maryland; the said Supplementary Zonings Maps to be considered as a part hereof as fully as if copies were hereto attached.


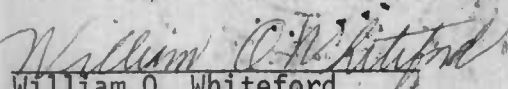
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 14th day of ~~September~~ ^{October}, 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman

ATTEST:



William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 141
NO. 30 OF THE

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 RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 323

ORDINANCE NO. 6-D-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-five (65) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on October 3, 1967):

An area consisting of approximately sixty (60) separate contiguous parcels of land, totaling approximately eighty (80) acres, fronting on the East and West sides of Magnolia Road (Route 152), on the North and South sides of Hanson Road West of Magnolia Road, South side of Hanson Road East of Magnolia Road (Route 152), North and South sides of Turners Lane and the North side of Beall Drive, from an "A-1" Agricultural District to an "R-1" Suburban Residence District, said area to be so designated on Supplementary Zoning Map Number Sixty-five D (65-D) of Harford County, Maryland.

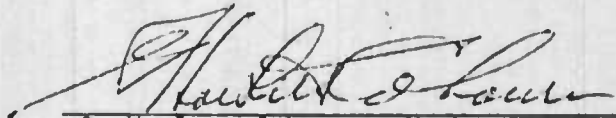
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-five (65) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "R-1" Suburban Residence District; said area being designated on Supplementary Zoning Map Number Sixty-five D (65-D) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 31st day of October, 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn, Chairman

ATTEST:

William O. Whiteford
William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 2
NO. 65-D-5 OF THE

9 35 AM '67

RECORDED HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LISER

2 PAGE 32A

ORDINANCE NO. 6-E-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number twenty-eight (28) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Fifth Election District of Harford County, as follows (a public hearing thereon having been held on October 3, 1967):

An area consisting of approximately two (2) acres on the Northeast side of Shuresville Road, approximately 500 feet Southeast of Darlington Road (Route 161) from an "A-1" Agricultural District and an "R-2" Urban Residence District to a "B-1" Neighborhood Business District, said area to be so designated on Supplementary Zoning Map Number twenty-eight A (28-A) of Harford County, Maryland.

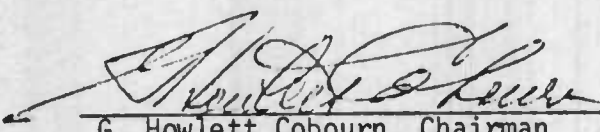
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number twenty-eight (28) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District and an "R-2" Urban Residence District to a "B-1" Neighborhood Business District; said area being designated on Supplementary Zoning Map Number twenty-eight A (28-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 31st day of October, 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY

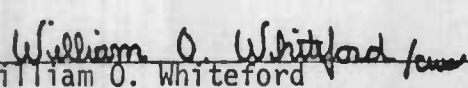

G. Howlett Cobourn, Chairman

RECEIVED FOR RECORD
& RECORDED IN LIBER. 224
NO. 324 OF THE

NOV 1 9 35 AM '67

Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

ATTEST:


William O. Whiteford
Director of Administration

LIBER

2 325

ORDINANCE NO. 6-F-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-One (41) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on October 9, 1967):

An area consisting of approximately ten (10) acres at the Northwest quadrant of Bynum and Conowingo Roads (Route 1), South side of connecting road leading off Conowingo Road (Route 1) westerly to the East-West Expressway (new Route 23) and to the Bel Air By Pass, from an "R-2" Urban Residence District to a "B-3" General Business District, said area to be so designated on Supplementary Zoning Map Number Forty-One G (41-G) of Harford County, Maryland.

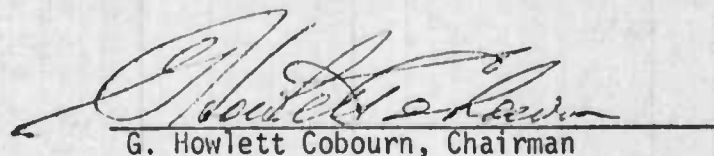
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-One (41) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "R-2" Urban Residence District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Forty-One G (41-G) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.


Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 31st day of October, 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY

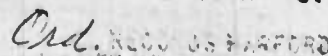

G. Howlett Cobourn, Chairman

ATTEST:


William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 2
NO. 325 OF THE

NOV 1 9 35 AM '67


CLERK

LIBER 2 PAGE 326

RESOLUTION
of the

Harford County Planning and Zoning Commission

A Resolution providing for the Amendment of the Master Plan for Harford County (including the official Land Use Plan and Map) so as to show a proposed Shopping Center on the Official Land Use Plan of Harford County at the property of Northcliff, Inc. (The Campus Hills Estates) on the North side of Churchville Rd. (Md. Rt. 22) adjacent to the East limits of the Harford Junior College approx. 1/4 mile east of Thomas Run Rd. containing forty-six (46) acres more or less.

WHEREAS, in connection with the Amendment mentioned above, the Harford County Planning and Zoning Commission in accordance with the provisions of Maryland Code Article 66-B, held a public hearing, after due notice of said hearing published in the three newspapers of general circulation in Harford County; and

WHEREAS, after due deliberation, the Harford County Planning and Zoning Commission finds that such amendment is in the public interest and in conformity with the purpose and objectives of planning and zoning in Harford County; and said Commission having given due consideration, among other things, to the character of the district and its suitability for particular uses, and with view to encouraging the most appropriate use of land in Harford County; and

WHEREAS, the adoption of this Resolution is carried by the affirmative votes of the Members of the Commission,

NOW THEREFORE, BE IT RESOLVED by the Harford County Planning and Zoning Commission, under the provisions of Section 18 of Article 66-B of the Annotated Code of Maryland as follows:

Section 1. That the Master Plan for Harford County be and it hereby is amended by placing an appropriate symbol on the Official Land Use Plan of Harford County so that such plan shows a proposed shopping center at the forty-six (46) acre tract of land of Northcliff, Inc. (Campus Hills Estates) on the North side of Churchville Rd. adjacent to the East limits of Harford Junior College approx. 1/4 mile East of Thomas Run Rd.

Section 2. That this action taken above shall be recorded on the plan by the indentifying signature of the Chairman and/or Secretary of the Commission.

Section 3. That an attested copy of the Amended plan be certified to the Board of County Commissioners and to the Clerk of the Circuit Court for Harford County.

Section 4. That this Resolution shall take effect as of the 21st day of November, 1967.

Approved this 7th day of November, 1967

HARFORD COUNTY PLANNING AND ZONING COMMISSION
OF HARFORD COUNTY, MD.

BY P. Mitchell Coale
P. Mitchell Coale, Chairman

Attest:

J. Lee Hanlon
J. Lee Hanlon,
Executive Secretary

RECEIVED FOR RECORD
& RECORDED IN LIBER 327
NOV 22 2 07 PM '67
REC'D. HARBORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 328

HARFORD COUNTY DOG ORDINANCE NO. 19

An Ordinance passed under and by virtue of the power and authority of Article 56, Section 194-(l)-(1) of the Annotated Code of Maryland, 1957 Edition, as amended, to be known as the Harford County Dog Ordinance.

BE IT ORDAINED:

SECTION I - DEFINITIONS - As used in this Ordinance, the following terms mean:

- Owner: Any person, partnership, association, or corporation owning, keeping or harboring a dog.
- Kennel: Any person, group of persons, or corporation engaged in the business of breeding, buying, selling or boarding dogs.
- Pet Shop: An establishment which offers to sell live animals of any species with the intent that they should be kept as pets in the household.
- At Large: Any dog will be deemed to be at large when he is off the property of his owner and not under the restraint of a responsible person.
- Restraint: A dog is under restraint within the meaning of this Ordinance if he is controlled by a leash or under the control and in view of an owner and obedient to that person's commands, on or within a vehicle being driven or parked on the street, or within the property limits of its owner or keeper.
- Animal Shelter or Animal Pound: Any premises so designated by the Animal Control Commission for the purpose of impounding and caring for the animals found running at large or in violation of this Ordinance.
- Animal Abandonment: Any owner of a dog or a domesticated animal who does not make a suitable effort to humanely dispose of the animal when ownership is no longer desired shall be guilty of animal abandonment.
- Animal Control Commission: The duly appointed animal control commission of the County.
- Animal Control Warden: The person or persons employed or designated as such by the Animal Control Commission as its enforcement officer.
- Public Nuisance: Any dog repeatedly found at large, making loud or objectionable sounds, damaging property, or in any manner which is deemed to be doing damage to property or the public health and well being of the people, or which is known to have bitten a person or shall have been determined by the Animal Control Commission to be a detriment to public health, welfare, and safety, shall be deemed to be a public nuisance.

Exposed to Rabies: A dog has been exposed to rabies within the meaning of this Ordinance if it has been bitten by, or exposed to any animal infected with rabies.

SECTION II - ANIMAL CONTROL COMMISSION

A. The Commission will consist of three persons: a member of the Harford County Health Department, a member of the Humane Society of Harford County, and one other resident of Harford County to be appointed by the County Commissioners of Harford County. The membership of the Commission shall not exceed three members, however, individual members may have advisory persons or groups. The term of office of Commission members shall be three years. The Commission will elect its own chairman. His term of office shall be for the period of his term on the Commission.

B. This Commission shall meet as often as deemed necessary by the Chairman to hear formal complaints which relate to animals and to conduct such business as deemed necessary to insure compliance with this Ordinance. The Commission shall promulgate rules and regulations governing methods of operation of the animal pound or shelter, methods of collection, care, and disposal of animals and such additional regulations as may be required for the enforcement of this Ordinance. The Commission will prepare a budget for the operation of the animal pound and the animal control activities as required to enforce this Ordinance, and present it to the County Commissioners. They shall keep records and be responsible to the County Commissioners.

C. 1. That Animal Control Wardens will be recommended by the Animal Control Commission to the County Commissioners for their approval.

2. The Animal Control Wardens will be County employees, and designated as constables by the County Commissioners.

SECTION III - ENFORCEMENT

The provisions of this Ordinance will be enforced by the Sheriff or his authorized deputies and the Animal Control Wardens who shall prosecute all persons found violating the provisions of this Ordinance.

SECTION IV - LICENSING

A. No person shall own, keep or harbor any dog within the County unless such dog is licensed as herein provided. Written application for such license shall be made to the Treasurer of Harford County. The application shall state the name and address of the owner and the name, breed, color, age and sex of the dog. The license fee shall be paid at the time of making application, thereupon a receipt and a numbered identification tag shall be issued to the owner.

B. The yearly fee shall be \$3.00 for male dogs and spayed female dogs; and \$5.00 for female dogs (unspayed). These tags shall be obtained when the dogs are over six months of age.

C. Every kennel which owns, harbors or keeps from five (5) to twenty-five (25) dogs over six months of age confined in a kennel shall pay an annual license fee of \$50.00, and a fee of \$75.00 if the kennel harbors or keeps more than twenty-five (25) dogs.

D. Every pet shop shall apply for an annual pet shop license. A fee shall be \$50.00 per year, however, pet shops will not be required to have kennel licenses but are required to maintain all requirements for the sale of dogs which are required of kennels. Pet shops will be required to maintain satisfactory sanitary conditions as determined by the local Health Department and meet all of the requirements which may be set forth for them by the Maryland State Department of Health or Maryland Livestock Sanitary Service of the University of Maryland.

E. The County Commissioners shall furnish annually to the County Treasurer or designated agent metal tags to be given to the owners of dogs when such owners shall pay the license fee for said dogs; such tags shall be of metal and not more than one inch in length, have the serial number corresponding with the number on the license issued, have a substantial metal fastener with which to be fastened to the dogs' collars. The general shape of said tag shall be changed from year and the tags furnished kennel owners shall have the word "kennel" thereon and each kennel license holder will be entitled to ten (10) identical tags. If any tag is lost, it shall be replaced by the County Treasurer or designated agent upon application by the person to whom the actual tag was issued upon production of such license and a fee of \$1.00. The Owners of kennel license will only use their

issued tags on dogs owned by them.

F. License tags will be worn by the dogs at all times.

G. The holders of kennel license will in writing submit to the Animal Control Commission within three days, a description of the animal, indicating age, sex, color and breed, the names and addresses of the persons who receive dogs from their kennels and their county residence.

H. All dog licenses and kennel licenses and pet shop licenses shall be issued for one year beginning with the first day of July. Applications for licenses may be made 30 days prior to and 45 days after the start of the licensing year or within 30 days of taking up residency in the County without penalty. When application is made after 45 days of the licensing year have elapsed, the applicant shall be assessed a penalty of fifty per cent of the license fee which amount shall be added and collected with the regular license fee; provided, if the dog, or kennel did not become subject to licensing until after the start of the licensing year, then no penalty shall be assessed.

I. If there is a change of ownership of a dog or kennel during the license year, the new owner may have the current license transferred to his name upon payment of a transfer fee of \$1.00.

J. If the application for license discloses that the dog for which a license is sought should be used as a "Guide Dog" trained to aid the blind; and it is actually used for this purpose, the license will be issued without payment of any fee and the issuing agent shall issue across the face of the license in red ink the words "Guide Dog".

K. If the application for license discloses that the dog for which a license is sought should be used as a police dog trained for this field and it is actually used for this purpose, the license shall be issued without payment of any fee and the issuing agent shall issue across the face of the license in red ink the words "police dog".

L. Veterinary hospitals or clinics, research facilities, where bonafied medical research is being conducted, humane shelters and other animal establishments operated by veterinarians are excluded in kennel licensing requirements of this Ordinance.

M. The licensing requirements of this Ordinance shall not apply to any dog belonging to a non-resident of the state and kept within the boundaries of Maryland for not longer than thirty (30) days.

N. The County Commissioners of Harford County are authorized to reimburse a tax collecting agency as they may deem necessary or allowable as compensation.

O. All monies collected for the sale of dog licenses shall be deposited in the General Fund of the County.

SECTION V - RESTRAINT

The owner shall not permit a dog to be at large, meaning to be off the premises or property of the owner, unless under restraint except dogs accompanied by the owner being used or trained for hunting and dogs accompanied by their owner on horseback. Owners of dogs which do damage while hunting will be responsible for their dogs' damages.

SECTION VI - IMPOUNDMENT

A. An unlicensed dog or dogs found running at large shall be taken to the Humane Society of Harford County and there confined in a humane manner for a period of not less than five (5) days, and may thereafter become the property of and may be disposed of in a manner approved by the Animal Control Commission, if not claimed by their owners.

B. Licensed dogs running at large will be held seven (7) days and a reasonable effort made to contact the owner prior to disposal. These unclaimed animals shall become the property of and may be disposed of in a manner approved by the Animal Control Commission except as hereinafter provided.

C. When dogs are found running at large and their ownership is known to the Animal Control Wardens, such dogs need not be impounded but the Animal Control Wardens shall at their discretion cite the owners of such dogs to appear in court to answer charges of violation of this Ordinance.

D. Immediately upon impounding dogs or other animals, the Animal Control Wardens shall make a prompt and reasonable effort to notify the owners of such dogs impounded, and inform them of the conditions whereby they may regain custody of such animals.

SECTION VII - REDEMPTIONS OF IMPOUNDED ANIMALS

A. The owner shall be entitled to resume possession of any impounded dog, except as hereinafter provided, and upon compliance of the license provision of this Ordinance and the payment of impoundment fees set forth herein.

B. Proof of ownership must be established. Proof of ownership may include the license receipt, affidavits of neighbors, a photograph, etc.

C. Any dog impounded under the provisions of this Ordinance may be reclaimed by the Owner upon payment of impoundment fees.

SECTION VIII- IMPOUNDMENT FEES

Any dog impounded hereunder may be reclaimed as herein provided upon payment by the owner to the Humane Society of Harford County of the sum of \$5.00. An additional charge of \$1.00 for each calendar day will be added to the Impoundment Fee for boarding the animal. Impoundment fees set forth herein shall be collected by the Animal Control Commission and such additional sums as herein provided by animal control activities.

SECTION IX - CONFINEMENT OF CERTAIN DOGS

A. The owner of any female dog in oestrus or a condition commonly known as "in heat" or "in season" will keep the dog confined in a closed building equipped with adequate flooring in such a manner that it will not be in contact with another dog except for intentional breeding purposes.

B. When in the judgment of the Animal Control Commission or a graduate veterinarian a dog should be destroyed for humane reasons, such dog shall be destroyed without a restriction of a holding time.

SECTION X - NUISANCE

It is unlawful for any person to own or keep a dog which disturbs the peace and quiet of any neighborhood in an inhabited area, or which is vicious and bites any person. Upon the sworn complaint before the People's Court of Harford County of any two or more persons of different households alleging that a dog disturbs the peace and quiet of any neighborhood in an inhabited area of Harford County,

or on the sworn complaint of any one or more persons that a dog is vicious and has bitten any person, a summons shall be issued to the owner or keeper of such dog to appear before the People's Court of Harford County. Upon proof that the dog disturbs the peace and quiet of any neighborhood in an inhabited area, or is vicious and has bitten any person, the owner or keeper shall be required to deliver up the offending dog to be destroyed in the most humane manner possible, unless he removes the dog permanently from the neighborhood. If the owner or keeper is required to deliver up the dog to be disposed of or to remove it as aforesaid, and he refuses or fails to do so, then it is the duty of the Sheriff or his duly authorized deputies or the Animal Control Commission to seize the dog wherever it may be found and to cause it to be disposed of in the most humane manner possible. Notwithstanding the foregoing provisions of this subsection, the barking of hunting dogs in pursuit of game shall not be considered a disturbance of the public peace for the purposes hereof.

SECTION XI - KILLING OF LIVESTOCK AND COMPENSATION

A. Any person may destroy any dog which he sees in the act of pursuing, attacking, wounding, killing or escaping after attacking, wounding or killing any poultry or livestock, or attacking human beings whether or not such dogs or dog bear the proper license tag required by these provisions. There shall be no liability on such persons in damages or otherwise for such killing.

B. When any inhabitant of this county shall have any sheep, poultry or livestock destroyed or injured by a dog or dogs, he may apply to the Animal Control Commission, who shall appoint three disinterested persons as appraisers to view and appraise the damages by him sustained, at least one of said appraisers shall be an Animal Control Warden and they, under oath, shall state in writing to the County Commissioners, the number of sheep, poultry or livestock killed, the character and extent of the injury, if any done, and the amount of damages, upon which they shall all agree, sustained by the owner; and both the appraisers and the owner of the sheep, poultry or livestock shall make oath that they believe the same to have been destroyed or injured by a dog or dogs; and when the report of such proceedings has been filed, the County Commissioners shall review said report, and if in their

judgment the amount of damages stated is unfair, they shall award such amount as they deem fair; which award shall be paid out of the fund hereby created; provided, however, that the said sworn report of the appraisers shall be deemed prima facie evidence of the fairness of the award of damages in each instance; and provided, further, that the County Commissioners shall not change such an award unless they shall have personal knowledge of its unfairness, or shall receive competent testimony to the effect that the award is in excess of a fair commercial valuation of the sheep, poultry or livestock injured or destroyed by dogs. And, if the owner of the dog or dogs doing the damage be known; it shall be the duty of the County Commissioners to notify such owner or owners to destroy said dog or dogs immediately. If such dog or dogs be destroyed by the owner, after notice as aforesaid, he shall be exempt from all further liability, but in case the said owner or owners shall refuse or neglect to destroy said dog or dogs upon notice as aforesaid, the said owner or owners shall be liable to the County Commissioners for said damages to the same extent as he would be liable in case of negligence or malicious destruction of property, and the said County Commissioners may in their discretion have the Animal Control Commission to destroy said dog or dogs.

SECTION XII - RABIES

When in any county any dog or other animal subject to rabies has bitten or attacked a person or which is suspected of having rabies, the facts shall be immediately reported to the County Health Department, and such animal shall not be destroyed but shall be confined in a way and for a time directed by the County Health Officer. Such confinement shall be terminated only with the consent of such County Health Officer. This confinement shall be at the expense of the owner or custodian of such animal. If the animal dies or has been destroyed, its head shall be removed and sent immediately to the County Health Department. The local Police Department or the County Sheriff shall enforce all orders of the County Health Officer under this provision.

SECTION XIII - REPORTS OF BITE CASES

It shall be the duty of every physician, other medical practitioner, outpatient or accident room of any hospital to report to the County Health

Department the names and addresses of persons treated for bites inflicted by dogs, together with such information as will be helpful in Rabies Control. (Art. 43, Sec. 616 of the Health Laws of Maryland).

SECTION XIV - RESPONSIBILITIES OF VETERINARIAN

It shall be the duty of every veterinarian and every resident of the State to report to the County Health Department any animal considered by him to be rabid or to be a rabies suspect.

SECTION XV - INVESTIGATION

For the purpose of discharging the duties imposed by this Ordinance and to enforce its provisions, the Sheriff or his authorized deputies and the Animal Control Wardens are empowered to enter upon any premises whereupon it is suspected a violation of the provisions of this Ordinance exists. It is further provided that the Sheriff or his authorized deputies and the Animal Control Wardens may enter the premises where any animal is kept or suspected of being kept in a reportedly cruel or inhumane manner and demand to examine such dog and to take possession of such dog, when in his opinion, it requires humane treatment. A certificate from a Maryland licensed veterinarian must be obtained within twenty-four (24) hours. This certificate must state obvious signs of inhumane treatment.

SECTION XVI - INTERFERENCE

No person shall interfere with, hinder or molest the Sheriff or his authorized deputies or the Animal Control Wardens in the performance of their duties or seek to release any animal in their custody except as herein provided.

SECTION XVII - RECORDS

A. It shall be the duty of the Animal Control Commission to keep, or cause to be kept, accurate and detailed records of impoundment and disposition of all dogs coming into their custody.

B. It shall be the duty of the Animal Control Commission to keep, or cause to be kept for one (1) year, accurate and detailed records of the bite cases


reported to them and investigation of the same.

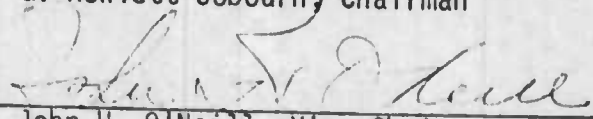
SECTION XVIII - PENALTY AND PROSECUTION

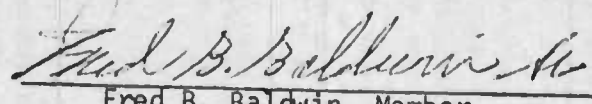
Any person violating or refusing to comply with any of the provisions of this Ordinance shall be guilty of a misdemeanor, and upon conviction thereof before the People's Court of Harford County or in the Circuit Court of Harford County, shall be fined a sum of not more than \$25.00 for each offense.

This Ordinance shall take effect January 1, 1968.

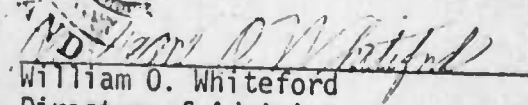
PASSED THIS 14th DAY OF November, 1967.



G. Howlett Cobourn, Chairman


John H. O'Neill, Vice-Chairman


Fred B. Baldwin, Member




William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
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NO 2 1328 OF THE

Nov 27 9 20 AM '67

Ord. REC'D IN HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 398

ORDINANCE NO. 6-H-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Maps Numbers Forty-one (41) and Forty-nine (49) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on November 7, 1967):

An area consisting of approximately two hundred and fifty-two (252) acres (Cherokee Farms), on the South side of Churchville Road (Route 22) opposite Moores Mill Road, from an "A-1" Agricultural District and an "R-1" Suburban Residence District to an "R-2" Urban Residence District, an "R-3" Multi-Family Residence District and a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Maps Numbers Forty-one H (41-H) and Forty-nine B (49-B) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Maps Numbers Forty-one (41) and Forty-nine (49) of Harford County, dated July 11, 1966, be and they are hereby amended so as to rezone the area described above from an "A-1" Agricultural District and an "R-1" Suburban Residence District to an "R-2" Urban Residence District, an "R-3" Multi-family Residence District and a "B-2" Community Business District, said area being designated on Supplementary Zoning Maps Forty-one H (41-H) and Forty-nine B (49-B) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if copies were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 5th day of December 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY



William O. Whiteford
William O. Whiteford
Director of Administration

G. Howlett Cobourn
G. Howlett Cobourn
Chairman

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COUNTY NO. & EXAMINED
PER GARLAND R. GREER.
CLERK

LIBER

2 PAGE 385

ORDINANCE NO. 6-G-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number thirty-two (32) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Fourth Election District of Harford County, as follows (a public hearing thereon having been held on November 7, 1967):

An area, consisting of approximately five and one-half (5 1/2) acres in Jarrettsville, beginning approximately 200 feet off the East side of Federal Hill Road (Route 165), approximately 450 feet North of the Jarrettsville County Road (Old Route 23), from an "A-1" Agricultural District to a "B-3" General Business District, said area to be so designated on Supplementary Zoning Map Number thirty-two C (32-C) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number thirty-two (32) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number thirty-two C (32-C) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 5th day of December, 1967.

COUNTY COMMISSIONERS OF HARFORD COUNTY



William O. Whiteford
William O. Whiteford
Director of Administration

G. Howlett Cobourn
G. Howlett Cobourn
Chairman

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& RECORDED IN LIBER 339 OF THE

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& RECORDED IN LIBER 339 OF THE
CLERK

LIBER 2 PAGE 340

ORDINANCE NO. 6-J-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-two (42) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on December 18, 1967):

An area consisting of approximately ninety (90) acres, approximately 600 feet off the North side of Churchville Road (Route 22), adjoining a portion of the East limits of the Harford Junior College property, approximately 1/4 mile East of Thomas Run Road, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District and a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number Forty-two B (42-B) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-two (42) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District and a "B-2" Community Business District said area being designated on Supplementary Zoning Map Number Forty-two B (42-B) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 19th day of January, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY

G. Howlett Cobourn
G. Howlett Cobourn, Chairman

ATTEST

William O. Whiteford
William O. Whiteford
Director of Administration

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NO. 340 OF THE

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CLERK
PER GARLAND R. GLENN
CLERK

LIBER

2 PAGE 341

ORDINANCE NO. 6-I-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Maps Numbers Forty-nine (49) and Fifty-six (56) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on November 14, 1967):

An area, consisting of the greater portion of the Glenwood Subdivision, the Country Club Park Subdivision, and a portion of the Colonial Acres Subdivision off the East side of Emmorton Road (Route 24), varying in distances extending easterly to within approximately 300 feet West of MacPhail Road; northerly to approximately 200 feet North of Brandy Wine Road; southerly to within approximately 800 feet North of Patterson Mill Road, from an "A-1" Agricultural District to an "R-1" Suburban Residence District, said area being as so designated on Supplementary Zoning Maps Numbers Forty-nine C (49-C) and Fifty-six C (56-C) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Maps Forty-nine (49) and Fifty-six (56) of Harford County, dated July 11, 1966, be and they are hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "R-1" Suburban Residence District; said area being as so designated on Supplementary Zoning Maps Numbers Forty-nine C (49-C) and Fifty-six C (56-C) of Harford County, Maryland; the said Supplementary Zoning Maps to be considered as a part hereof, as fully as if copies were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 19th day of January, 1968.

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& RECORDED IN LIBER 2
NO. 2-341 OF THE

COUNTY COMMISSIONERS OF HARFORD COUNTY

JAN 24 11 30 AM '68

G. Howlett Cobourn
Chairman

ATTEST:

William O. Whiteford
Director of Administration

LICK

2 342

ORDINANCE NO. 6-L-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-one (41) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on January 22, 1968):

An area, consisting of approximately three and six-tenths (3.6) acres situate on the North side of Moores Mill Road, approximately one-quarter (1/4) mile East of Conowingo Road (Route 1) from an "A-1" Agricultural District and an "R-2" Urban Residence District to an "R-3" Multi-Family Residence District, said area to be so designated on Supplementary Zoning Map Number Forty-one I (41-I) of Harford County, Maryland.

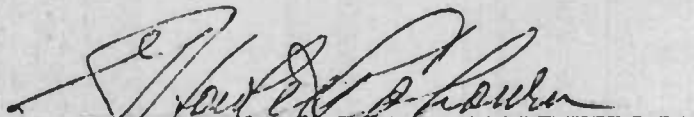
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:


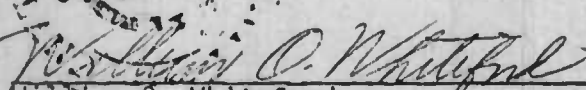
Section 1. That Zoning Map Number Forty-one (41) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District and an "R-2" Urban Residence District to an "R-3" Multi-Family Residence District; said area being designated on Supplementary Zoning Map Number Forty-one I (41-I) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 20th day of February, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman



William O. Whiteford
Director of Administration

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& RECORDED IN LIBER 678
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Ord. RECORDED IN HARFORD
COUNTY NO. & EXAMINED
PER CARLAND R. GREER,
CLERK

LIVER 2 PAGE 343

ORDINANCE NO. 6-K-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend the provisions of Ordinance No. 6, (the 1966 printed Edition of the Harford County Zoning Ordinance) for Sections 4.21 and 11.015 as follows (a public hearing thereon having been held on January 22, 1968):

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Ordinance No. 6, the Harford County Zoning Ordinance be and it is hereby amended by deleting the following provision under ARTICLE 4 - DEFINITIONS Section 4.21:

Any area where waste discarded or salvaged materials are bought, sold, exchanged, baled, packed, stored, disassembled or handled, including auto wrecking yards, house wrecking yards, used lumber yards and places or yards for storage of salvaged housewrecking and structural steel materials and equipment; but not including areas where such uses are conducted entirely within a completely enclosed building, and not including pawn shops and establishments for the sale, purchase or storage of used furniture and household equipment if stored inside, used cars in operable condition, salvaged machinery and the processing of used, discarded or salvaged materials as part of manufacturing operations.

and in lieu thereof insert the following provision to be known as Section 4.21:

JUNK YARD: Any area where waste discarded or salvaged materials are bought, sold, exchanged, baled, packed, stored, disassembled or handled, including auto wrecking yards, house wrecking yards, used lumber yards and places or yards for storage of salvaged house wrecking and structural steel materials and equipment; but not including areas where such uses are conducted entirely within a completely enclosed building, and not including pawn shops and establishments for the sale, purchase or storage of used furniture and household equipment if stored inside, used cars in operable condition in a legally established sales lot, or used motor vehicles in view from adjoining properties or highways, licenses for the current or preceding year and for which the owner or occupant of the property holds a title for the vehicles, salvaged machinery and the processing of used, discarded or salvaged materials as part of manufacturing operations.

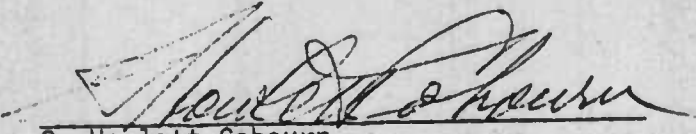
Section 2. That Ordinance No. 6, the Harford County Zoning Ordinance be and it is hereby amended by deleting the word "properly" in ARTICLE ELEVEN (11) "B-1" NEIGHBORHOOD BUSINESS DISTRICT 11.01 Principal Permitted Uses--Section 11.015 and in lieu thereof insert the work "effectively" so as Section 11.015 shall read as follows:

Automobile filling stations, minor repair and storage garages including the parking and storing of vehicles resulting from towing services authorized by private and-or police action irrespective of the condition of said automobiles, provided that the storage area is effectively screened and maintained so the stored vehicles are not visible from the road and adjoining properties, or located in the most possible remote area of the premises and screened from adjoining residential properties and provided further that in no case shall said vehicles be stored or parked longer than 90 days; and commercial parking lots for passenger vehicles, except as provided in Section 16.04.

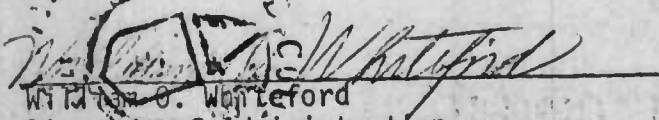
Section 3. That this Ordinance shall take effect as of the date of its passage.

Approved this 20th day of February, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman

ATTEST:


W. H. Whiteford
Director of Administration

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& RECORDED IN LIBER 344
NO. 2 FOLIO 343 OF THE

FEB 23 1 07 PM '68

Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 345

ORDINANCE NO. 6-N-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-one (61) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on March 18, 1968):

An area, of two non-contiguous parcels, totaling approximately one and two-thirds (1 2/3) acres, one parcel being located at the intersection of the existing and proposed relocation of Route 24 (Emmorton Road) and the other parcel being on the Southwest side of the proposed relocation of Route 24 (Emmorton Road) approximately 130 feet South of the first parcel, both parcels adjoining the Invitation Inn property South of the Route 24 Interchange of the John F. Kennedy Memorial Highway (I-95), from an "R-2" Urban Residence District to a "B-2" Community Business District, said area to be so designated on Supplementary Zoning Map Number Sixty-one D (61-D) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-one (61) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "R-2" Urban Residence District to a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Sixty-one D (61-D) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 5th day of April, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY



William O. Whiteford
William O. Whiteford
Director of Administration

G. Howlett Cobourn
Chairman

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NO. 2 345 OF THE

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Ord. REC'D & EXAMINED
COUNTY CLERK
PER CARLAND R. ORGER,
CLERK

LIBER 2 PAGE 346

ORDINANCE NO. 6-M-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-six (56) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on March 18, 1968):

An area, consisting of approximately eight tenths (0.8) of an acre, on the West side of Emmorton Road (Route 24) approximately 1,000 feet North of Plum Tree Road, from an "R-1" Suburban Residence District and an "M-1" Light Industrial District to a "B-3" General Business District, said area to be so designated on Supplementary Zoning Map Number Fifty-six D (56-D) of Harford County, Maryland.

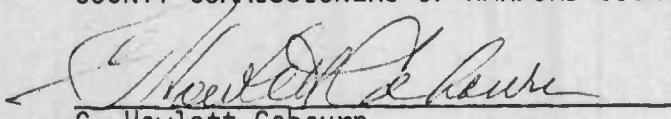
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-six (56) of Harford County, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above, from an "R-1" Suburban Residence District and an "M-1" Light Industrial District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Fifty-six D (56-D) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 2nd day of April, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY

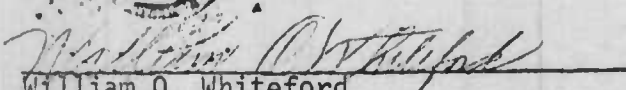

G. Howlett Cobourn
Chairman

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Ord. RECORDED IN
COUNTY, MD. & EXAMINED
PER GARLAND R. GREEN,
CLERK




William O. Whiteford
Director of Administration

LIBER

2 PAGE 347

ORDINANCE NO. 22

for Harford County

An Ordinance to repeal Ordinance No. 12; Section 4 of Ordinance No. 13; and Sections 3.09 and 29.04 of Ordinance No. 19 for Harford County pertaining to fees for Planning and Zoning, Sanitation, Building, Plumbing and Scavenger Licenses and Permits, and re-enact under Ordinance No. 22 pursuant to the provisions and authority vested in the County Commissioners of Harford County under Article 25, Section 3 (s) a Schedule of Fees to be paid for the construction of improvements to real property, zoning certificates, sanitation, plumbing permits or any associated licenses with these services.

NOW THEREFORE, BE IT ORDAINED, by the County Commissioners of Harford County, Maryland,

Section 1. The following fees shall be charged all applicants as shown in the following Schedule of Fees, which shall be paid to the Treasurer of Harford County.

SCHEDULE OF FEES

LICENSES FOR OPERATORS

- | | |
|---------------------------------|---------|
| 1. Scavenger - First Unit | \$25.00 |
| 2. Scavenger - Succeeding Units | \$15.00 |

CERTIFICATES OF OPERATION

- | | |
|----------------------------|---------|
| 3. Master Electrician | \$35.00 |
| 4. Journeyman Electrician | \$10.00 |
| 5. Oil Burner Electrician | \$25.00 |
| 6. Sign Electrician | \$25.00 |
| 7. Maintenance Electrician | \$25.00 |
| 8. Master Plumber | \$35.00 |
| 9. Master Gas Fitter | \$35.00 |
| 10. Drain Layer | \$15.00 |
| 11. Journeyman Plumber | \$10.00 |
| 12. Journeyman Gas Fitter | \$10.00 |

FEES

13. New Construction--Building and Zoning Fees

- A. Residential dwellings and/or structures and/or mobile homes \$30.00 per 1 family unit
- B. Business, commercial and shopping centers \$40.00 per business and/or commercial unit
- C. Industrial and/or industrial parks \$50.00 per industrial unit
- D. Accessory buildings and/or fences
 - (1) Residential and home occupation \$ 5.00
 - (2) Business, commercial and industrial or home occupation \$10.00

14. Alterations--Building and Zoning Fees

- A. Residential dwellings and/or structures and/or mobile homes \$15.00 per 1 family unit
- B. Business, commercial and shopping centers \$30.00 per business and/or commercial unit
- C. Industrial and/or industrial parks \$40.00 per industrial unit
- D. Accessory buildings and/or fences \$ 5.00

15. Private and Public Utilities

- A. Structure \$10.00
- B. Lines above and below ground \$10.00 per mile or fraction thereof
(excluding the local service distribution lines)

16. Private Recreation in Subdivisions

\$10.00

17. Signs

- A. Off Premise
 - (1) Single Face \$20.00
 - (2) Double Face \$30.00
- B. On Premise Signs and Directional Signs
 - (1) Under 4 square feet \$ 5.00
 - (2) Over 4 square feet \$10.00

18. Plumbing Fees

- A. Residential and/or mobile homes \$ 1.00 per fixture
\$ 5.00 minimum per 1 family unit
- B. Business, commercial and industrial \$ 1.00 per fixture
\$25.00 minimum per business
and/or commercial unit
- C. Swimming Pools \$10.00
- D. Storm Drains (Commercial and Industrial) \$10.00
- E. Oil Interceptor (Commercial and Industrial) \$10.00
- F. Municipal Connections
 - (1) Existing Construction
 - (a) Water Service \$ 5.00
 - (b) Sewer Service \$ 5.00
 - (2) New Construction
 - (a) Water and/or Sewer Service \$ 5.00

19. Gas Service

- A. 3/4" or smaller \$ 3.00
- B. 3/4" and under 2" \$ 4.00
- C. 2" and under 6" \$10.00
- D. 6" or over \$50.00

20. Rezoning

- A. Land \$50.00 plus \$1.00 per acre for
every acre over 50 acres
- B. Text Amendments \$50.00 per Article

NOTE: Advertising to be paid by the petitioner

21. Board of Appeals

\$40.00 each case

22. Subdivision

- A. Preliminary Plans \$ 1.00 per lot
\$15.00 minimum
- B. Amendment to Approved Preliminary Plans \$ 5.00 per plan

23. Agricultural--Building Permit Fees

- A. New Construction \$10.00
B. Accessory \$ 5.00

24. Exempt

- A. Religious*
B. Educational
C. County, Towns, State and Federal Owned Buildings and Property
D. Non-Profit Organizations

*This exclusion is granted only for facilities for their own use. All schedule fees will apply on facilities where revenue will be derived from rent or other fees (i.e. apartments, stores, etc.).

Section 2. No refunds will be given on application fees where approvals have been granted. All permits will be valid for one year from date of issue. Thereafter, a new permit is required.

Section 3. Penalty and Prosecution

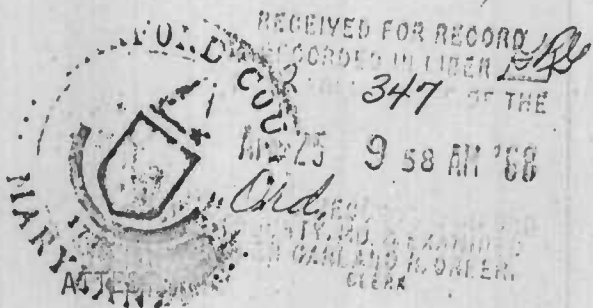
Any person, firm or corporation violating or refusing to comply with any of the provisions of this Ordinance shall be guilty of a misdemeanor, and upon conviction thereof before the People's Court of Harford County or in the Circuit Court of Harford County, shall be fined a sum of not more than One Hundred Dollars (\$100.00) for each offense.

Section 4. Saving Clause

Should any section or part of any section of provisions of this Ordinance be declared invalid or unconstitutional by a court of competent jurisdiction, this shall not effect the validity of any other section, part of a section, or provision of this Ordinance, or the Ordinance as a whole, other than the part so declared to be invalid or unconstitutional.

Section 5. This Ordinance shall take effect on the first day of May, 1968.

Approved this 23rd day of April, 1968.



COUNTY COMMISSIONERS OF HARFORD COUNTY

G. Howlett Cobourn
G. Howlett Cobourn

John H. O'Neill
John H. O'Neill

William O. Whiteford
William O. Whiteford
Director of Administration

Fred B. Baldwin, Sr.
Fred B. Baldwin, Sr.

LIBER

2 PAGE 351

ORDINANCE NO. 6-0-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty (40) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on April 1, 1968):

An area consisting of approximately eight (8) acres at the Northeast quadrant of Rock Spring Road (Route 24) and the Bel Air By Pass, from an "R-3" Multi-Family Residence District to a "B-1" Neighborhood Business District, said area to be so designated on Supplementary Zoning Map Number Forty-D (40-D) of Harford County, Maryland.

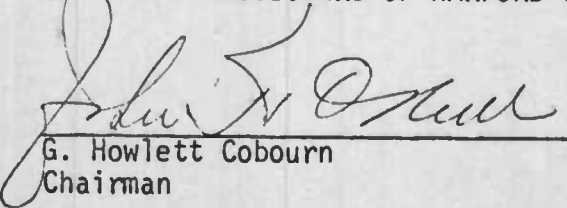
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty (40) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "R-3" Multi-Family Residence District to a "B-1" Community Business District; said area being designated on Supplementary Zoning Map Number Forty-D (40-D) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

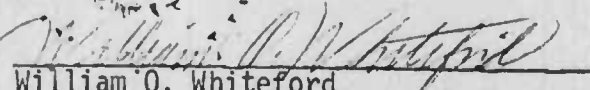
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 23rd day of April, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY

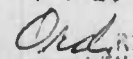

G. Howlett Cobourn
Chairman




William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 2351
NO. 2 OF THE

APR 25 3 10 PM '68

 RECORDED IN
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

✓
LIBER

2 PAGE 352

ORDINANCE NO. 6-Q-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend the provisions of Ordinance No. 6, (the 1966 printed Edition of the Harford County Zoning Ordinance) for Section 4.14 and Section 5.00 as follows (a public hearing thereon having been held on April 15, 1968):

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Ordinance No. 6, the Harford County Zoning Ordinance, be and it is hereby amended by adding to Section 4.14 - DISTRICT - of ARTICLE 4 - DEFINITIONS, the following wording:

"and the term "I-P District" shall mean Industrial Park District"

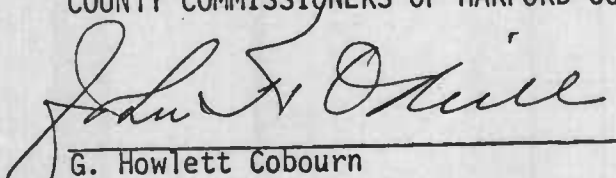
Section 2. That Ordinance No. 6, the Harford County Zoning Ordinance, be and it is hereby amended by adding to Section 5.00 of ARTICLE 5 - DISTRICTS AND BOUNDARIES THEREOF, the following wording:

" "I-P" - Industrial Park District (Boundaries to be established)"

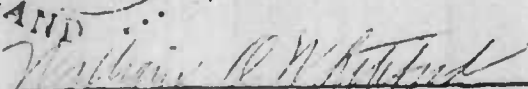
Section 3. That this Ordinance shall take effect as of the date of its passage.

Approved this 22nd day of April, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman




William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 352
NO. 2 OF THE

APR 25 3 10 PM '68

Ord. REC'D TO FILE
COUNTY NO. 6 EXAMINED
FOR GARLAND R. GREER,
CLERK

LIBER

2 PAGE 353

ORDINANCE NO. 6-P-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Nine (9) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown situate in the Fourth Election District of Harford County, as follows (a public hearing thereon having been held on April 15, 1968):

An area consisting of approximately seventy-five (75) acres, in the vicinity of Harkins, at the Northwest intersection of Harkins Road (Route 136) and Linkous Road, from an "A-1" Agricultural District to an "M-1" Light Industrial District, said area to be so designated on Supplementary Zoning Map Number Nine-A (9-A) of Harford County, Maryland.

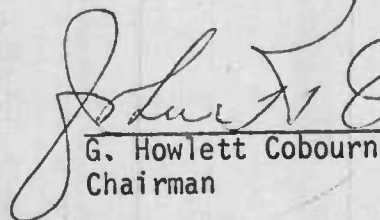
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Nine (9) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "M-1" Light Industrial District; said area being designated on Supplementary Zoning Map Number Nine-A (9-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

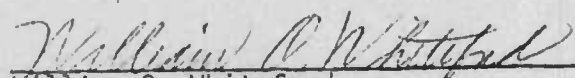
Approved this 23rd day of April, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman



ATTEST:


William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER
NO. 2-353 OF THE

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Ord. REC'D & EXAMINED
COUNTY NO. & EXAMINED
PER GARLAND R. GREEN,
CLERK

LIBER

2 PAGE 354

ORDINANCE NO. 6-R-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-six (56) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on April 29, 1968):

An area, consisting of two non-contiguous parcels totaling approximately 6 2/3 acres to a "B-2" Community Business District, one parcel being the two and twenty-nine hundredths (2.29) acres from an "R-2" Urban Residence District at the Northwest quadrant of Wheel and Emmorton (Route 24) Roads and the other parcel being the four and thirty-five hundredths (4.35) acres from an "A-1" Agricultural District at approximately 500 feet off the West side of Emmorton Road approximately 2,000 feet North of Wheel Road, said area to be so designated on Supplementary Zoning Map Number Fifty-six E (56-E) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-six (56) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "R-2" Urban Residence District and an "A-1" Agricultural District to a "B-2" Community Business District; said area being designated on Supplementary Zoning Map Number Fifty-six E (56-E) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 3rd day of June, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY

G. Howlett Cobourn
G. Howlett Cobourn
Chairman



William O. Whiteford
William O. Whiteford
Director of Administration

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Old RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

100 2 1030
Ordinance No. 6-S-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-one (41) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on July 1, 1968):

An area, consisting of approximately eighteen and one-half (18 1/2) acres on the East side of Conowingo Road (Route 1) opposite the Bel Air By-Pass, and situate between the future Maryland Route 23 (East-West Highway) and the future Bel Air By-Pass (Route 1); from an "A-1" Agricultural District to a "B-3" General Business District, said area to be so designated on Supplementary Zoning Map Number Forty-one J (41-J) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

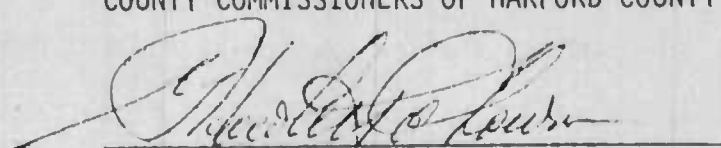
Section 1. That Zoning Map Number Forty-one (41) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Forty-one J (41-J) of Harford County, Maryland, the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

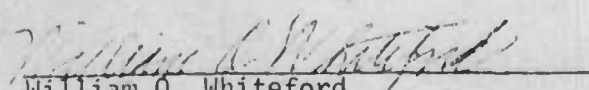
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 24th day of September 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY




G. Howlett Cobourn
Chairman


William O. Whiteford
Director of Administration

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HARFORD COUNTY

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2 PAGE 356

ORDINANCE NO. 6-T-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Maps Numbers sixty-one (61) and sixty-five (65) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on July 15, 1968):

An area, consisting of approximately two hundred and fifty (250) acres on the West side of Emmorton Road (Route 24) extending to Winters Run and Winters Run Road; bounded on the North side of the B & O Railroad and extending to the North and South sides of Old Philadelphia Road (Route 7); and bounded on the North and South sides of The John F. Kennedy Memorial Highway (I-95); from an "A-1" Agricultural District, an "R-2" Urban Residence District, and a "B-1" Neighborhood Business District to an "R-3" Multi-Family Residence District, an "M-1" Light Industrial District and an "M-2" General Industrial District, said area to be so designated on Supplementary Zoning Maps Numbers sixty-one E (61-E) and sixty-five E (65-E) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Maps Numbers sixty-one (61) and sixty-five (65) of Harford County, Maryland, dated July 11, 1966, be and they are hereby amended so as to rezone the area described above from an "A-1" Agricultural District, an "R-2" Urban Residence District, and a "B-1" Neighborhood Business District to an "R-3" Multi-Family Residence District, an "M-1" Light Industrial District and an "M-2" General Industrial District; said area being designated on Supplementary Zoning Maps Numbers sixty-one E (61-E) and sixty-five E (65-E) of Harford County, Maryland, the said Supplementary Zoning Maps to be considered as a part hereof, as fully as if copies were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 1st day of October, 1968.

ATTEST:

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William O. Whiteford
Director of Administration

COUNTY COMMISSIONERS OF HARFORD COUNTY

G. Howlett Cobourn
Chairman



LIBER

2 PAGE 357

ORDINANCE NO. 6-U-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number sixty-one (61) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown; situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on July 15, 1968):

An area, consisting of approximately twenty-eight and one-third (28 1/3) acres on the Northeast side of Woodsdale Road, approximately 1/4 mile Southeast of Emmorton Road (Route 24); from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District, said area to be so designated on Supplementary Zoning Map Number sixty-one F (61-F) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number sixty-one (61) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area being designated on Supplementary Zoning Map Number sixty-one F (61-F) of Harford County, Maryland, the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 1st day of October, 1968.

COUNTY COMMISSIONERS

OF HARFORD COUNTY

G. Howlett Coburn
G. Howlett Coburn
Chairman

William C. Whitford
WILLIAM C. WHITFORD
Director of Administration

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& RECORDED IN LIBRARY
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HARFORD COUNTY, MD. CLERK OF THE
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CLERK

LIBER

2 PAGE 358

ORDINANCE NO. 6-X-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Five (5) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Fifth Election District of Harford County, as follows (a public hearing thereon having been held on September 16, 1968):

An area, consisting of approximately one and one-tenths (1 1/10) acres, approximately 100 feet off the West side of Main Street in Cardiff, extending back to Railroad Alley and the Maryland and Pennsylvania Railroad and approximately 200 feet South of the Pennsylvania State Line; from a "B-3" General Business District to an "M-2" General Industrial District, said area to be so designated on Supplementary Zoning Map Five A (5-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Five (5) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from a "B-3" General Business District to an "M-2" General Industrial District; said area being designated on Supplementary Zoning Map Number Five A (5-A) of Harford County Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 15th day of October, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY



William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 2 PAGE 358 OF THE
Howlett Cobourn
Chairman

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COUNTY CLERK
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 359

ORDINANCE NO. 6-W-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-five (65) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on September 16, 1968):

An area, consisting of approximately two (2) acres on the East side of Edgewood Road (Route 24), approximately 800 feet South of Pulaski Highway (Route 40); from an "R-1" Suburban Residence District and an "R-2" Urban Residence District to a "B-3" General Business District, said area to be so designated on Supplementary Zoning Map Sixty-five F (65-F) of Harford County, Maryland.

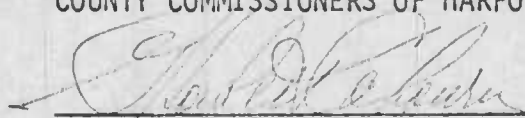
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:


Section 1. That Zoning Map Number Sixty-five (65) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "R-1" Suburban Residence District and an "R-2" Urban Residence District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Sixty-five F (65-F) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 15th day of October, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman


W. O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER
NO. 359 OF THE

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RECORDED & EXAMINED
PER GARLAND R. GREER,
CLERK

LIDER

2 PAGE 360

ORDINANCE NO. 6-V-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-six (56) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on September 16, 1968):

An area, consisting of approximately one hundred and twenty (120) acres at the Northeast intersection of Emmorton Road (Route 24) and old Emmorton Road and approximately 500 feet South of Plum Tree Road and approximately 1/4 mile North of Wheel Road; from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District for approximately ninety-nine (99) acres; from an "A-1" Agricultural District to a "B-3" General Business District for approximately eighteen (18) acres; and from an "R-2" Urban Residence District to a "B-3" General Business District for approximately three (3) acres, said area to be so designated on Supplementary Zoning Map Number Fifty-six F (56-F) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

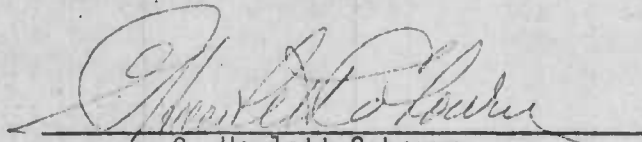
Section 1. That Zoning Map Number Fifty-six (56) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above for approximately ninety-nine (99) acres from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District, for approximately eighteen (18) acres from an "A-1" Agricultural District to a "B-3" General Business District, and for approximately three (3) acres from an "R-2" Urban Residence District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Fifty-six F (56-F) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.


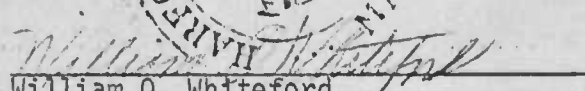
Section 2. That the Ordinance shall take effect as of the date of its passage.

LIBER 2 PAGE 361

Approved this 15th day of October, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman

ATTEST:


William O. Whiteford
Director of Administration

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& RECORDED IN LIBER 2 PAGE 361
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RECORDED & EXAMINED
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER 2 PAGE 362

ORDINANCE NO. 6-Y-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-four (64) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on October 14, 1968):

An area, consisting of approximately one (1) acre on the North side of Pulaski Highway (Route 40), approximately 150 feet East of the Little Gunpowder Falls, approximately 200 feet West of Joppa Farm Road and opposite Joppatowne; from an "A-1" Agricultural District to a "B-3" General Business District, said area to be so designated on Supplementary Zoning Map Sixty-four A (64-A) of Harford County, Maryland.

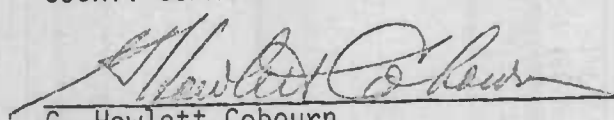
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

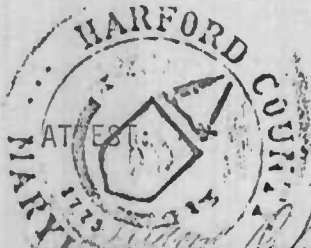
Section 1. That Zoning Map Number Sixty-four (64) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Sixty-four A (64-A) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

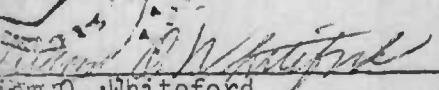
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 4th day of November, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY

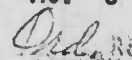

G. Howlett Cobourn
Chairman




W. O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 2
NO. 362 OF THE

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RECORDED HANDED
COUNTY, MD. & EXAMINED
PER CARLAND R. GREER,
CLERK

LIBER

2 P. 363

ORDINANCE NO. 6-Z-5

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-one (41) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on October 14, 1968):

An area consisting of approximately one-half (1/2) acre, on the South side of Churchville Road (Route 22) approximately 100 feet East of Fountain Green Road (Route 543); from an "A-1" Agricultural District to a "B-1" Neighborhood Business District, said area to be so designated on Supplementary Zoning Map Forty-one K (41-K) of Harford County, Maryland.

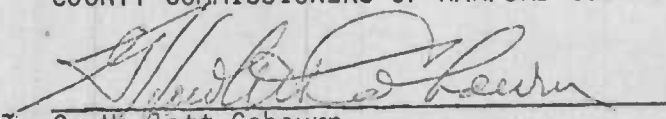
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-one (41) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-1" Neighborhood Business District; said area being designated on Supplementary Zoning Map Number Forty-one K (41-K) of Harford County, Maryland; the said Supplementary Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

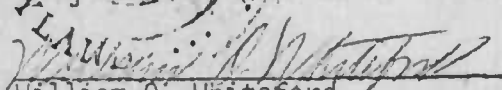
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 11th day of November, 1968.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman




William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER
NO. 2 FOLIO 363 OF THE

Nov 6 3 34 PM '68

RECORDED HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 304

HARFORD COUNTY PEDDLERS AND SOLICITORS ORDINANCE NO. 23

An Ordinance passed under and by virtue of the power and authority of Section 224, Code of Public Local Laws of Harford County, 1965 Edition, being Article 13 of the Code of Public Local Laws of Maryland to be known as the Harford County Peddlers and Solicitors Ordinance.

BE IT ORDAINED:

SECTION I: DEFINITIONS - As used in this Ordinance, the following terms mean:

Resident: Any person that has lived continuously in Harford County for a period of one year immediately prior to application.

Non-Resident: Any person that has not lived continuously in Harford County for a period of one year immediately prior to application.

SECTION II: From and after the effective date hereof, it shall be unlawful for any person to sell, solicit or attempt to sell or solicit any book, books, magazine or magazines or other publications within the County until he shall have first taken out a license for that purpose except that businesses with proper Harford County Trader's License for established places of business are exempt from this section.

SECTION III: The license shall be issued by the Office of Permits and Licenses for Harford County who shall receive for each such license issued the sum of Twenty-five Dollars (\$25.00) per annum from non-residents and the sum of Ten Dollars (\$10.00) per annum from residents. Each and every license issued pursuant hereto shall be for one year, beginning on the first day of July and expiring on the 30th day of June of the following year. The entire fee will be charged for such licenses even though issued after the first day of July.

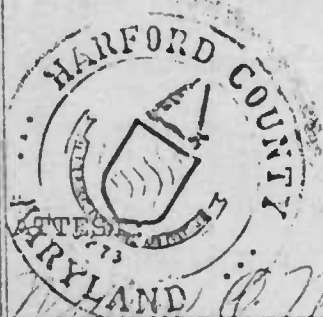
SECTION IV: The applicant for any license required by this Ordinance shall be required to state his name, address, weight, color, height, color of hair and eyes, and name and address of employer, all of which shall be noted on the license issued pursuant to this Ordinance.

SECTION V: Every person issued a license pursuant hereto shall carry such license on his person at all times while engaged in the selling, soliciting or attempting to sell or solicit any book, books, magazine or magazines or other publications and shall exhibit such license to any person within the County who shall demand to view such license.

SECTION VI: All residents representing a religious, charitable, educational or non-profit institution or organization shall be required to obtain a license in accordance with the provisions hereof except that the fee required herein may be waived by the County Commissioners of Harford County.

SECTION VII: Any person violating or refusing to comply with any of the provisions of this Ordinance shall be guilty of a misdemeanor, and upon conviction thereof before the People's Court of Harford County or in the Circuit Court for Harford County shall be fined a sum of not more than Two Hundred Dollars (\$200.00).

This Ordinance shall take effect *January 1st*, 1969, 1968.



William O. Whiteford
William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER
NO. 2 FOLIO 364 OF THE

NOV 9 10 53 AM '68

Cliff RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. OREER,
CLERK

PASSED THIS 5th DAY OF
November, 1968.

G. Howlett Cobourn
G. Howlett Cobourn

John H. O'Neill
John H. O'Neill

Fred B. Baldwin
Fred B. Baldwin

LIBER 2 PAGE 366

ORDINANCE NO. 6-A-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Ordinance No. 6, being the Harford County Zoning Ordinance, by modifying Section 20.462 - Non-Conforming Use of Article 20 -- Board of Appeals (a public hearing thereon having been held on December 2, 1968) by striking out the following lines thereof which reads:

"undertaken within two (2) years after the date of December 5, 1966, or within two (2) years from the date when the use of the building becomes non-conforming, whichever is the least restrictive requirement, except in cases where 35% extensions were authorized by the Board during the five (5) year period from December 5, 1957, to December 5, 1962, or the four (4) year period from December 5, 1962, to December 5, 1966, inclusive."

and in lieu thereof, insert the following which reads:

"undertaken within one (1) year after the date of December 5, 1968, or within one (1) year from the date when the use of the building becomes non-conforming, whichever is the least restrictive requirement, except in cases where 35% extensions were authorized by the Board during the five (5) year period from December 5, 1957, to December 5, 1962, or the four (4) year period from December 5, 1962, to December 5, 1966, or the two (2) year period from December 5, 1966, to December 5, 1968, inclusive."

BE IT ENACTED AND ORDAINED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Ordinance No. 6, the Harford County Zoning Ordinance be, and it is hereby amended by modifying Section 20.462 - Non-Conforming Uses of Article 20 - Board of Appeals, by striking out the following lines thereof which reads:

"undertaken within two (2) years after the date of December 5, 1966, or within two (2) years from the date when the use of the building becomes non-conforming, whichever is the least restrictive requirement, except in cases where 35% extensions were authorized by the Board during the five (5) year period from December 5, 1957, to December 5, 1962, or the four (4) year period from December 5, 1962, to December 5, 1966, inclusive."

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and in lieu thereof, insert the following:

"undertaken within one (1) year after the date of December 5, 1968, or within one (1) year from the date when the use of the building becomes non-conforming, whichever is the least restrictive requirement, except in cases where 35% extensions were authorized by the Board during the five (5) year period from December 5, 1957, to December 5, 1962, or the four (4) year period from December 5, 1962, to December 5, 1966, or the two (2) year period from December 5, 1966, to December 5, 1968, inclusive."

Section 2. That the Ordinance shall take effect as of December 5, 1968.

Approved, this 3rd day of December, 1968.

and in lieu thereof, insert the following:

within one (1) year COUNTY COMMISSIONERS OF HARFORD COUNTY

one (1) year from the

non-conforming, whichever

except in cases where 35%

during the five (5) year period

from the four (4) year period

from the two (2) year period

from December 5, 1966, to December 5, 1968, inclusive.



William O. Whiteford
Director of Administration

G. Howlett Cobourn
G. Howlett Cobourn
Chairman

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& RECORDED IN LIBER
NO. 2 FOLIO 366 OF THE

DEC 4 9 13 AM '68

Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER CARLAND R. GREER,
CLERK

Harford County, as follows:

Section 1. That Ordinance No. 6, the Harford County Zoning Ordinance be, and it is hereby amended by modifying Section 20.02, which reads as follows: "Article 20 - Board of Appeals, by striking out the following lines thereof: 'and in lieu thereof, insert the following:'"

"undertaken within two (2) years after the date of December 5, 1966, or within two (2) years from the date when the use of the building becomes non-conforming, whichever is the least restrictive requirement, except in cases where 35% extensions were authorized by the Board during the five (5) year period from December 5, 1957, to December 5, 1962, or the four (4) year period from December 5, 1962, to December 5, 1966, or the two (2) year period from December 5, 1966, to December 5, 1968, inclusive."

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ORDINANCE NO. 6-B-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend the provisions of Ordinance No. 6, known as the Harford County Zoning Ordinance, for Section 19.3 -- Filing Plans -- of Article 19 -- Enforcement -- as follows (a public hearing thereon having been held on August 20, 1968):

Delete the second (last) paragraph from Section 19.3 which reads as follows:

"In every case where the lot is not provided and is not proposed to be provided with public water supply and/or the disposal of sanitary wastes by means of public sewers, the application shall be accompanied by a Certificate of Approval by the Health Officer of Harford County of the proposed method of water supply and/or disposal of sanitary wastes"

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Section 19.3 of said Ordinance be modified by deleting from it the following paragraph which reads:

"In every case where the lot is not provided and is not proposed to be provided with public water supply and/or the disposal of sanitary wastes by means of public sewers, the application shall be accompanied by a Certificate of Approval by the Health Officer of Harford County of the proposed method of water supply and/or disposal of sanitary wastes."

Section 2. That this Ordinance shall take effect as of the date of its passage.

Approved this 10th day of December, 1968.

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NO. 2 FOLIO 368 OF THE

COUNTY COMMISSIONERS OF HARFORD COUNTY 59 AM '68

G. Howlett Cobourn
Chairman

RECORDED HARFORD
COUNTY, MD. & EXAMINED
BY GARLAND R. GREER,
CLERK



to the Com. please

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HARFORD COUNTY PEDDLERS AND SOLICITORS ORDINANCE NO. 24

An Ordinance to repeal the Harford County Peddlers and Solicitors Ordinance No. 23 and re-enact under and by virtue of the power and authority of Section 224, Code of Public Local Laws of Harford County, 1965 Edition, being Article 13 of the Code of Public Local Laws of Maryland a new ordinance to be known as the Harford County Peddlers and Solicitors Ordinance.

BE IT ORDAINED:

Section I: From and after the effective date hereof, it shall be unlawful for any person to sell, solicit or attempt to sell or solicit any book, books, magazine or magazines or other publications within the County until he shall have first taken out a license for that purpose except that businesses with proper Harford County Trader's License for established places of business are exempt from this section.

Section II: The license shall be issued by the Office of Permits and Licenses for Harford County without charge. Each and every license issued pursuant hereto shall be for one year beginning on the first day of July and expiring on the 30th day of June of the following year.

Section III: The applicant for any license required by this Ordinance shall be required to state his name, address, weight, color, height, color of hair and eyes, and name and address of employer, all of which shall be noted on the license issued pursuant to this Ordinance.

Section IV: Every person issued a license pursuant hereto shall carry such license on his person at all times while

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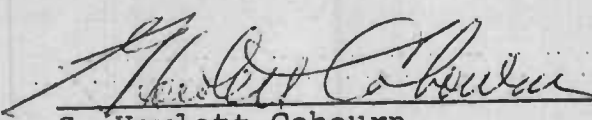
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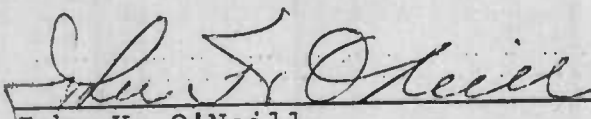
engaged in the selling, soliciting or attempting to sell or solicit any book, books, magazine or magazines or other publications and shall exhibit such license to any person within the County who shall demand to view such license.

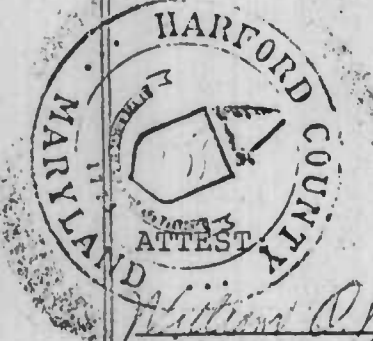
Section V: Any person violating or refusing to comply with any of the provisions of this Ordinance shall be guilty of a misdemeanor, and upon conviction thereof before the People's Court of Harford County or in the Circuit Court for Harford County shall be fined a sum of not more than Two Hundred Dollars (\$200.00).

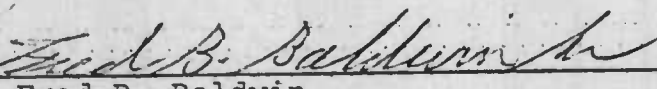
This Ordinance shall take effect March 1, 1969.

PASSED THIS 17th DAY OF FEBRUARY, 1969.


G. Howlett Cobourn


John H. O'Neill


William O. Whiteford
Director of Administration


Fred B. Baldwin

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Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

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ORDINANCE NO. 6-C-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Maps Numbers Sixty-one (61), Sixty-two (62) and Sixty-six (66) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on December 23, 1968):

An area consisting of approximately eighty-seven and one-tenth (87.1) acres, on the South side of Old Philadelphia Road (Route 7), approximately 1/4 mile East of Van Bibber Road, extending South to the Baltimore Gas and Electric Company lines; from an "M-1" Light Industrial District to an "M-2" General Industrial District, said area to be so designated on Supplementary Zoning Maps Numbers Sixty-one G (61-G), Sixty-two C (62-C) and Sixty-six D (66-D) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Maps Numbers Sixty-one (61), Sixty-two (62) and Sixty-six (66) of Harford County, Maryland, dated July 11, 1966, be and they are hereby amended so as to rezone the area described above from an "M-1" Light Industrial District to an "M-2" General Industrial District; said area being designated on Supplementary Zoning Maps Numbers Sixty-one G (61-G), Sixty-two C (62-C) and Sixty-six D (66-D) of Harford County, Maryland; the said Supplementary Zoning Maps to be considered as a part hereof, as fully as if copies were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 18th day of February 1969.



COUNTY COMMISSIONERS OF HARFORD COUNTY

G. Howlett Cobourn
G. Howlett Cobourn
Chairman

William O. Whiteford
William O. Whiteford
Director of Administration

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PAGE 3/1 OF THE

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RECORDED & EXAMINED
PER GARLAND R. GREER,
CLERK

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P. MITCHELL COALE,
CHAIRMAN

WORLEY N. UMBARGER
VICE-CHAIRMAN

HELEN R. WHITE

BISHOP J. MOLL

PAUL S. LAKE, JR.

HARFORD COUNTY
PLANNING & ZONING COMMISSION

2ND FLOOR
45 S. MAIN STREET
BEL AIR, MARYLAND 21014
PHONE: TE 8-6000-EXT. 281, 282, 283, 284

February 20th, 1969

J. LEE HANLON,
EXECUTIVE SECRETARY

LOYAL R. JOHNSON,
COUNTY PLANNER

MERVYN G. THOMPSON,
ZONING INSPECTOR

J. WILMER CRONIN,
ATTORNEY

Mr. Garland R. Greer
Clerk of the Circuit Court
Harford County Court House
Bel Air, Md. 21014

Dear Mr. Greer:

Re: Planning Items
of the Planning Phase
in the Updating and
Revising of the Master
Plan

Relative to Section 17 of Article 66-B, the Maryland Zoning and Planning Enabling Act of the Code of Public General Laws of Maryland, the enclosed attested copies as follows are certified to you for recordation:

- 1) Resolution adopted by the Commission on February 18, 1969
- 2) General Land Use Plan Map adopted February 18, 1969
- 3) Major Thoroughfare Plan Map adopted February 18, 1969
- 4) Public Schools Plan Map of the Community Facilities Plan adopted February 18, 1969
- 5) Parks and Open Space Plan Map of the Community Facilities Plan adopted February 18, 1969
- 6) Public Building Plan Map of the Community Facilities Plan adopted February 18, 1969

In appreciation of your consideration to the matter, I am

Sincerely,

J. Lee Hanlon,
Executive Secretary

JLH/j

cc: Board of Co. Commissioners of
Harford County
J. Wilmer Cronin, Counsel for P&ZC
Consultant John I. Cofer of HB&A
File

FOR RECORD
& RECORDED IN LIBER
NO. 372 OF THE

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RECORDED & EXAMINED
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

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P. MITCHELL COALE.
CHAIRMAN

WORLEY N. UMBARGER
VICE-CHAIRMAN

HELEN R. WHITE
BISHOP J. MOLL
PAUL S. LAKE, JR.

HARFORD COUNTY
PLANNING & ZONING COMMISSION

2ND FLOOR
45 S. MAIN STREET
BEL AIR, MARYLAND 21014
PHONE: TE 8-6000-EXT. 281, 282, 283, 284

J. LEE HANLON,
EXECUTIVE SECRETARY

LOYAL R. JOHNSON,
COUNTY PLANNER

MERVYN G. THOMPSON,
ZONING INSPECTOR

J. WILMER CRONIN,
ATTORNEY

R E S O L U T I O N

WHEREAS, the Planning and Zoning Commission of Harford County is authorized and/or required, under the provisions of Article 66-B known as the Planning and Zoning Enabling Act of the Annotated Code of Maryland, and Ordinance No. 4 of the County Commissioners of Harford County (adopted February 24, 1953) to perform certain planning and zoning functions in Harford County, including the adoption of amendments, extensions or additions to the County's Master Plan; and

WHEREAS, the Planning and Zoning Commission of Harford County did adopt its current Master Plan (usually referred to as the 1957 Master Plan) and as well made recommendations to the Board of County Commissioners on the implementation items of the current Master Plan prior to the adoption of the implementation items by the Board of County Commissioners in 1957 and 1959, respectively; and

WHEREAS, the Planning and Zoning Commission of Harford County did recognize the need to Update and Revise the ten (10) year old current Master Plan of Harford County, for reasons which included a population surge of 51,782 in 1950 to 76,722 in 1960, and estimated to be 110,000 in 1969 and a projection to 200,000 by the year 1985; and

WHEREAS, the recent population surge and economic growth coupled with the expansion of suburban living, have caused Harford County to change from a rural to a suburban community; and

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- 2 -

WHEREAS, the Board of County Commissioners engaged the services of Harland Bartholomew and Associates of Washington D. C. (now of Richmond, Virginia), a planning consulting firm, to assist, guide and make recommendations in the revising and updating of the current Master Plan, both on planning and implementation items; and

WHEREAS, after careful consideration and due deliberation, the Planning and Zoning Commission of Harford County, on September 17th, 1968, held a public hearing on the following planning items:

- (1) Background For Planning, report including population and economics supplements, natural features and Existing Land Use Map;
- (2) General Land Use Plan, report and map;
- (3) Major Thoroughfare Plan, report and map;
- (4) Community Facilities Plan, report and maps on Public Schools Plan, Plan for Parks and Open Space, Plan for Public Buildings, 1985 Water System and 1985 Sewerage System; and

WHEREAS, the Planning and Zoning Commission of Harford County at this time is continuing its work on the implementation items in the Updating and Revising of the Master Plan, and to submit a recommendation to the Board of County Commissioners for its adoption;

NOW, THEREFORE, BE IT RESOLVED, that the Planning and Zoning Commission of Harford County as authorized by said Article 66-B, does hereby Update and Revise the current Master Plan by adopting the following planning items:

LIBER 2 365

- 3 -

- (1) Background For Planning, report including population and economics supplements, natural features and Existing Land Use Map;
- (2) General Land Use Plan, report and map;
- (3) Major Thoroughfare Plan, report and map;
- (4) Community Facilities Plan, report and maps on Public Schools Plan, Plan for Parks and Open Space, Plan for Public Buildings, 1985 Water System and 1985 Sewerage System; and

BE IT FURTHER RESOLVED, that attested copies of the above adopted planning items shall be certified to the Board of County Commissioners and the Clerk of the Circuit Court for Harford County, and said planning items shall become effective upon the date of their recording in the Record Office of said Court.

Adopted this 18th day of February in the year of 1969.

THE PLANNING AND ZONING COMMISSION
OF HARFORD COUNTY, MARYLAND

By P. Mitchell Coale
P. Mitchell Coale, Chairman

Attest:

J. Lee Hanlon,
Executive Secretary

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CLERK RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBR 2 PAGE 318

P. MITCHELL COALE,
CHAIRMAN

WORLEY N. UMBARGER
VICE-CHAIRMAN

HELEN R. WHITE
BISHOP J. MOLL
PAUL S. LAKE, JR.

**HARFORD COUNTY
PLANNING & ZONING COMMISSION**

2ND FLOOR
45 S. MAIN STREET
BEL AIR, MARYLAND 21014
PHONE: TE 8-6000-EXT. 281, 282, 283, 284

February 25, 1969

J. LEE HANLON,
EXECUTIVE SECRETARY

LOYAL R. JOHNSON,
COUNTY PLANNER

MERVYN G. THOMPSON,
ZONING INSPECTOR

J. WILMER CRONIN,
ATTORNEY

Mr. Garland R. Greer
Clerk of the Court
Harford County Court House
Bel Air, Maryland 21014

Dear Mr. Greer:

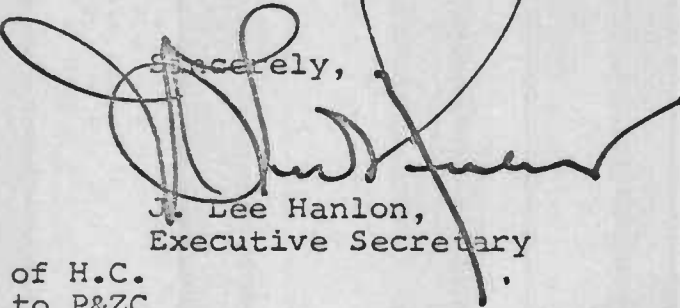
Re: Planning Items of the
Planning Phase in the
Updating & Revising of
the Master Plan

Relative to Section 17 of Article 66-B, the Maryland
Zoning and Planning Enabling Act of the Code of Public
General Laws of Maryland, the enclosed attested copies as
follows are certified to you for recordation:

- 1) 1985 Water System Plan Map of the Community
Facilities Plan adopted February 18, 1969.
- 2) 1985 Sewerage System Plan Map of the Community
Facilities Plan adopted February 18, 1969.

In appreciation of your consideration to the matter,
I am

Sincerely,


J. Lee Hanlon,
Executive Secretary

JLH/j
cc: Bd. of Co. Commissioners of H.C.
J. Wilmer Cronin, Counsel to P&ZC
Consultant John I. Cofer of HB&A
File

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FEB 25 10 40 AM '69

Ord. No. 12-1969
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 377

ORDINANCE NO. 6-D-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-five (65) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on February 17, 1969):

An area consisting of approximately six (6) acres, beginning approximately 350 feet to 500 feet off the North side of Pulaski Highway (Route 40), approximately 2500 feet West of Emmorton Road (Route 24), from an "A-1" Agricultural District to a "B-3" General Business District, said area to be so designated on Supplementary Zoning Map Number Sixty-five G (65-G) of Harford County, Maryland.

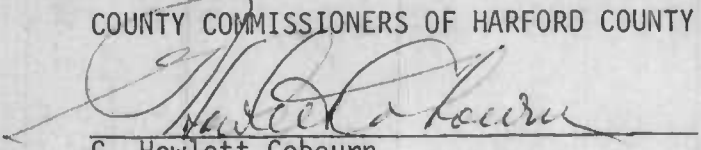
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:


Section 1. That Zoning Map Number Sixty-five (65) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Sixty-five G (65-G) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 18th day of March 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman


WILLIAM O. WHITEFORD
Director of Administration

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NO. 377 OF THE

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Ord. REC'D. & EXAMINED
COUNTY, MD. & EXAMINED
PER CARLAND R. GREER,
CLERK

LIBER

2 PAGE 378

ORDINANCE NO. 6-F-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Twenty-seven (27) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown situate in the Fifth Election District of Harford County, as follows (a public hearing thereon having been held on March 10, 1969):

An area consisting of approximately three and eight hundred forty-eight thousandths (3.848) acres at the Southeast quadrant of Conowingo (Route 1) and Poole Roads and extending to the North side of Arena Road, from an "A-1" Agricultural District to a "B-1" Neighborhood Business District; said area to be so designated on Supplementary Zoning Map Number Twenty-seven A (27-A) of Harford County, Maryland.

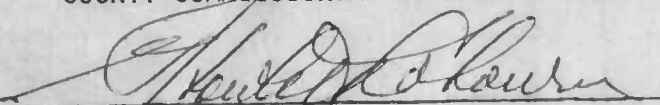
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Twenty-seven (27) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-1" Neighborhood Business District; said area being designated on Supplementary Zoning Map Number Twenty-seven A (27-A) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

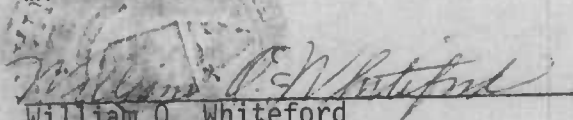
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 14th day of April, 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman

ATTEST:


William O. Whiteford
Director of Administration

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Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER CARLAND R. GREER,
CLERK

LIBER

2 PAGE 379

ORDINANCE NO. 6-E-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-two (62) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on March 10, 1969):

An area, consisting of approximately seventy-eight hundredths (0.78) of an acre, on the South side of Old Philadelphia Road (Route 7) approximately 1/2 mile East of Van Bibber Road, from an "A-1" Agricultural District to an "M-1" Light Industrial District; said area to be so designated on Supplementary Zoning Map Number Sixty-two D (62-D) of Harford County, Maryland.

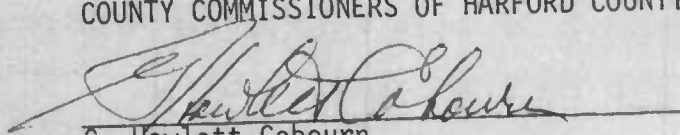
BE IT ORDAINED AND ENACTED BY THE BOARD OF COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:


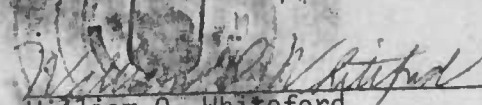
Section 1. That Zoning Map Number Sixty-two (62) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "M-1" Light Industrial District; said area being designated on Supplementary Zoning Map Number Sixty-two D (62-D) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 14th day of April, 1969.

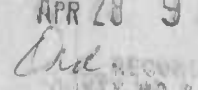
COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman



William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER
NO. 2 OF 379

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GARLAND R. GREER,
CLERK

LIBER 2 PAGE 380

ORDINANCE NO. 6-G-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Maps Numbers Fifty-eight (58) and Sixty-three (63) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Second Election District of Harford County, as follows (a public hearing thereon having been held on March 10, 1969):

An area, consisting of approximately forty-nine (49) acres on the South side of Perryman Road (Route 159) and adjacent to the East property line of the International Pipe and Granics Corporation (the Lock Joint Pipe Company) opposite the intersection of Cranberry and Perryman Roads and extending back to the Pennsylvania Railroad from an "A-1" Agricultural District to an "M-2" General Industrial District, said area to be so designated on Supplementary Zoning Maps Numbers Fifty-eight C (58-C) and Sixty-three B (63-B) of Harford County, Maryland.

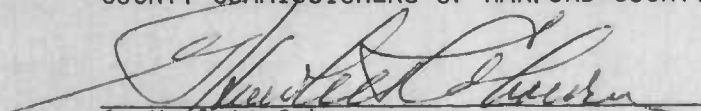
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-eight (58) and Sixty-three (63) of Harford County, Maryland, dated July 11, 1966, be and they are hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "M-2" General Industrial District; said area being designated on Supplementary Zoning Maps Numbers Fifty-eight C (58-C) and Sixty-three B (63-B) of Harford County, Maryland; the said Zoning Maps to be considered as a part hereof, as fully as if copies were hereto attached.

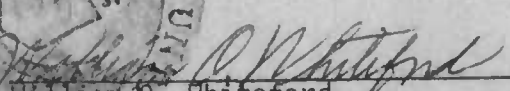
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 14th day of April, 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY

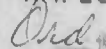

G. Howlett Cobourn
Chairman




William G. Whiteford
Director of Administration

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& RECORDED IN LIBER 2 PAGE 380 OF THE

APR 28 9 27 AM '69


CLERK

LIBER

2 381

ORDINANCE NO. 6-I-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-eight (48) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on April 14, 1969):

An area, consisting of approximately one hundred and forty-five and eight-tenths (145.8) acres at the Southeast quadrant of Vale and Red Pump Roads, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area to be so designated on Supplementary Zoning Map Number Forty-eight A (48-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-eight (48) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area being designated on Supplementary Zoning Map Number Forty-eight A (48-A) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 10th day of June, 1969.



William O. Whiteford
William O. Whiteford
Director of Administration

COUNTY COMMISSIONERS OF HARFORD COUNTY

G. Howlett Cobourn
G. Howlett Cobourn
Chairman

RECEIVED FOR RECORD
& RECORDED IN LIBER 2
NO. 381 OF THE

JUN 16 3 44 PM '69

Carland R. Greep
Carland R. Greep
Clerk

LIBER

2 PAGE 382

ORDINANCE NO. 6 - H. - 6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-two (62) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on April 14, 1969):

An area, consisting of approximately twenty-five and three quarters (25 3/4) acres on the South side of Philadelphia Road (Route 7), approximately 1/2 mile East of Van Bibber Road and in part bounding on the East side of Chillbury Hall Road, and extending approximately 125 feet East of Ha Ha Branch, from an "A-1" Agricultural District to an "M-2" General Industrial District, said area to be so designated on Supplementary Zoning Map Number Sixty-two E (62-E) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-two (62) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "M-2" General Industrial District; said area being designated on Supplementary Zoning Map Number Sixty-two E (62-E) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved the 10th day of June, 1969.



William O. Whiteford
William O. Whiteford
Director of Administration

COUNTY COMMISSIONERS OF HARFORD COUNTY

G. Howlett Coburn
G. Howlett Coburn
Chairman

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& RECORDED IN LIBER *LP4*
NO 2 PAGE 382 OF THE

JUN 16 3 45 PM '69

Ord. RECORDED
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 383

ORDINANCE NO. 6-0-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend the provisions of Ordinance No. 6, known as the Harford County Zoning Ordinance adopted on December 5, 1957, and which from time to time had been amended by the following amendments for which a public hearing was held on February 10, 1969, by the County Commissioners:

1. Strike from the Zoning Ordinance (No. 6). subsection number 7.0110 as contained in Article 7 - "A-1" Agricultural District as a Principal Permitted Use under Section 7.01 which reads as follows:

Sawmills for cutting timber grown primarily on the premises, provided that any such use shall be located not less than six hundred (600) feet from any dwelling not located on the same premises, school, church, or institution of human care.

2. Enact a new subsection to the Zoning Ordinance to be known as Section 7.0212 to Article 7 - "A-1" Agricultural District under Section 7.02 Conditional Uses, Requiring Board Authorization, to read as follows:

7.0212 - Sawmills for sawing and cutting timber, including barking, edging, planing, chipping, washing and shredding

3. Amend Section 15.012 of Section 15.01 Principal Permitted Uses of Article 15 - "M-2" General Industrial District, a line of which reads as follows:

Sawmill, the manufacture of excelsior, wood fiber or sawdust products

and enact a new line to read as follows:

Sawmill and/or planing mill and/or the manufacture of excelsior, wood fiber or sawdust products

BE IT ENACTED AND ORDAINED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Ordinance No. 6, the Harford County Zoning Ordinance be, and it is hereby amended as follows:

1. Strike from the Zoning Ordinance (No. 6). subsection number 7.0110 as contained in Article 7 - "A-1" Agricultural District as a Principal Permitted Use under Section 7.01 which reads as follows:

Sawmills for cutting timber grown primarily on the premises, provided that any such use shall be located not less than six hundred (600) feet from any dwelling not located on the same premises, school, church, or institution of human care.

2. Enact a new subsection to the Zoning Ordinance to be known as Section 7.0212 to Article 7 - "A-1" Agricultural District under Section 7.02 Conditional Uses, Requiring Board Authorization, to read as follows:

7.0212 - Sawmills for sawing and cutting timber, including barking, edging, planing, chipping, washing and shredding

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3. Amend Section 15.012 of Section 15.01 Principal Permitted Uses of Article 15 - "M-2" General Industrial District, a line of which reads as follows:

Sawmill, the manufacture of excelsior, wood fiber or sawdust products

and enact a new line to read as follows:

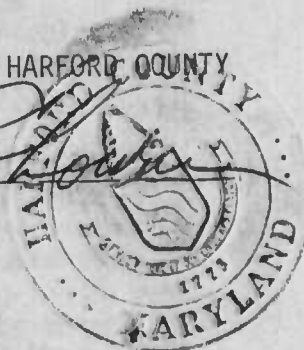
Sawmill and/or planing mill and or the manufacture of excelsior, wood fiber or sawdust products

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 31st day of June 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY

G. Howlett Cobourn
Chairman



ATTEST:

William O. Whiteford
William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBRARY
NO. 2 VOL. 383 OF THE

JUL 2 9 57 AM '69

Ord. RECORDED
COUNTY, MD. & EXAMINED
PER GARLAND R. CREEK,
CLERK

LIBER

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ORDINANCE NO. 6-J-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-six (56) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on February 10, 1969):

An area, consisting of two (2) contiguous areas, one (1) of approximately sixty-six (66) acres located approximately 300 feet off the North side of Wheel Road and approximately one-quarter (1/4) mile West of Emmorton Road (Route 24), from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; and the other of approximately eleven and one-half (11 1/2) acres, located approximately 1,700 feet off the North side of Wheel Road and approximately one-quarter (1/4) mile West of Emmorton Road (Route 24), from an "A-1" Agricultural District to a "B-1" Neighborhood Business District; said areas to be so designated on Supplementary Zoning Map Number Fifty-six G (56-G) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-six (56) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone one (1) area as described above from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District and the other area as described above from an "A-1" Agricultural District to a "B-1" Neighborhood Business District; said areas being designated on Supplementary Zoning Map Number Fifty-six G (56-G) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were to hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 30th day of June 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY

RECEIVED FOR RECORD
& RECORDED IN LIBER
NO. 2 FOLIO 385

JUL 2 9 58 AM '69

G. Howlett Cobourn
Chairman

ATTEST:

William O. Whiteford
Director of Administration

LIBER

2 386

ORDINANCE NO. 6-K-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Ordinance No. 6, being the Harford County Zoning Ordinance, by amending Section 15.06--HEIGHT REGULATIONS of Article 15--"M-2" General Industrial District (a public hearing thereon having been held on May 26, 1969) by striking out the following lines thereof that reads:

"No structure shall exceed three (3) stories or fifty (50) feet in height, except as provided in Section 18.2"

and in lieu thereof, insert the following provision to read as follows:

"No structure shall exceed one hundred (100) feet in height, except as provided in Section 18.2"

BE IT ENACTED AND ORDAINED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Ordinance No. 6, the Harford County Zoning Ordinance be, and it is hereby amended by amending Section 15.06--HEIGHT REGULATIONS--in an "M-2" General Industrial District, by striking out the following lines thereof that reads:

"No structure shall exceed three (3) stories or fifty (50) feet in height, except as provided in Section 18.2"

and in lieu thereof, insert the following provision:

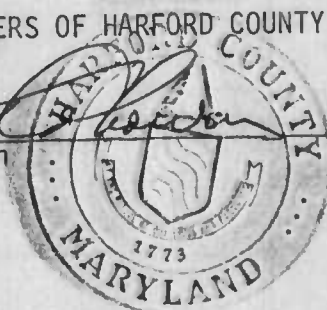
"No structure shall exceed one hundred (100) feet in height, except as provided in Section 18.2"

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 31st day of June, 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY

G. Howlett Cobourn
Chairman



ATTEST:

William O. Whiteford
William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBRARY
NO. 2 386 OF THE

JUL 2 9 58 AM '69

Ord. RECORDS
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 387

ORDINANCE NO. 6-N-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-one (61) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on June 16, 1969):

An area, consisting of approximately three-quarters (3/4) of an acre at the Northeast quadrant of Philadelphia Road (Route 7) and relocated Route 24 (Emmorton Road), from an "R-2" Urban Residence District to a "B-1" Neighborhood Business District; said area to be so designated on Supplementary Zoning Map Number Sixty-one H (61-H) of Harford County, Maryland.

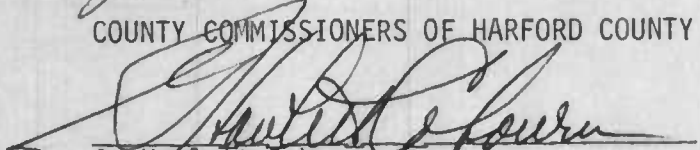
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-one (61) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "R-2" Urban Residence District to a "B-1" Neighborhood Business District; said area being designated on Supplementary Zoning Map Number Sixty-one H (61-H) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

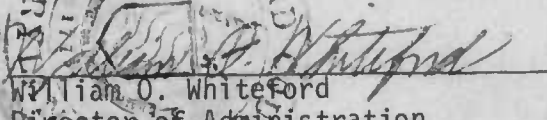
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 30th day of June 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY


G. Howlett Cobourn
Chairman

ATTEST:


William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
& RECORDED IN LIBER 2 387 OF THE

JUL 2 9 59 AM '69

Ord. RECORDED
COUNTY, MD. & EXAMINED
PER GARLAND R. GREEN
CLERK

LIBER

2 388

ORDINANCE NO. 6-L-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-eight (58) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Second Election District of Harford County, as follows (a public hearing thereon having been held on June 3, 1969):

An area, consisting of approximately six (6) acres, on or near Cranberry Road and near the road leading from Philadelphia Road (Route 7) to Perryman, being the lands described in a deed from Rebecca Buchanan, recorded in Liber 736, Folio 252, from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area to be so designated on Supplementary Zoning Map Number Fifty-eight D (58-D) of Harford County, Maryland.

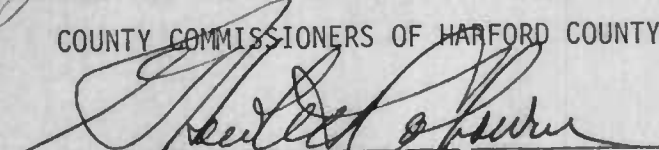
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-eight (58) of Harford County, Maryland dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area being designated on Supplementary Zoning Map Number Fifty-eight D (58-D) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

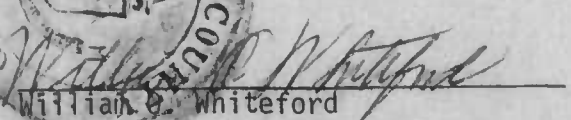
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 30th day of June 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY

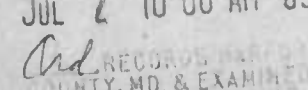

G. Howlett Cobourn
Chairman




William E. Whiteford
Director of Administration

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& RECORDED IN LIBER
NO. 2 388 OF THE

JUL 2 10 00 AM '69


COUNTY, MD. & EXAMINED
BY GARLAND R. GREER,
CLERK

LIBER

2 - 389

ORDINANCE NO. 6-M-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-six (56) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on June 16, 1969):

An area, consisting of approximately two hundred (200) acres on the North and South sides of Wheel Road, approximately 1,700 feet West of Emmorton Road (Route 24), from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area to be so designated on Supplementary Zoning Map Number Fifty-six H (56-H) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-six (56) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "R-3" Multi-Family Residence District; said area being designated on Supplementary Zoning Map Number Fifty-six H (56-H) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 31st day of June 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY

G. Howlett Cobourn
G. Howlett Cobourn
Chairman



William O. Whiteford
William O. Whiteford
Director of Administration

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& RECORDED IN LIBER 2
NO. 389 OF THE

JUL 2 10 00 AM '69

Ord.
COUNTY, MD. & EXAMINED
PER GARLAND R. GREEN.
CLERK

LIBER

2 PAGE 390

ORDINANCE NO. 20-A FOR HARFORD COUNTY

An Ordinance to repeal and re-enact Section IV, titled "Licensing" subsection "C" and subsection "H" of Harford County Dog Ordinance No. 20 as authorized by Article 56, Section 194-(l)-(1) of the Annotated Code of Maryland, 1957 Edition as amended.

BE IT ORDAINED:

By the County Commissioners of Harford County, Maryland, that Section IV, titled "Licensing", subsection "C" and subsection "H" of Harford County Dog Ordinance No. 20 be repealed and re-enacted to read as follows:

SECTION IV - LICENSING

C. Every kennel which owns, harbors or keeps from one (1) to nine (9) dogs over six (6) months of age confined in a kennel shall pay an annual license fee of \$25.00; a fee of \$50.00 if the kennel owns, harbors or keeps from ten (10) to twenty-five (25) dogs; and a fee of \$75.00 if the kennel owns, harbors or keeps more than twenty-five (25) dogs.

H. All dog licenses and kennel licenses and pet shop licenses shall be issued for one year beginning with the first day of July. Applications for licenses may be made 30 days prior to and 45 days after the start of the licensing year or within 30 days of taking up residency in the County without penalty. When application is made after 45 days of the licensing year have elapsed, the applicant shall be assessed a penalty of fifty per cent of the license fee which amount shall be added and collected with the regular license fee; provided, if the dog, or kennel did not become subject to licensing until after the start of the licensing year or if the dog owner has been given a summons and

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is subject to pay a fine for failing to have a proper license,
then no penalty shall be assessed.

This Ordinance shall take effect July 1, 1969.

PASSED THIS DAY OF JUNE, 1969.

ATTEST:

William O. Whiteford
William O. Whiteford
Director of Administration

G. Howlett Cobourn
G. Howlett Cobourn - Chairman

John H. O'Neill
John H. O'Neill - Vice-Chairman

Fred B. Baldwin
Fred B. Baldwin - Member

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NO 2 390 OF THE

JUL 2 4 02 PM '69

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COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

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2 PAGE 392

ORDINANCE NO. 6-P-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Thirty-three (33) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on July 14, 1969):

An area, consisting of approximately six (6) acres on the South side of the Jarrettsville County Road (Old Route 23) and on the East and West sides of Industry Lane of the Forest Hill Industrial Park, from an "R-2" Urban Residence District to an "M-1" Light Industrial District; said area to be so designated on Supplementary Zoning Map Number Thirty-three A (33-A) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Thirty-three (33) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "R-2" Urban Residence District to an "M-1" Light Industrial District; said area being designated on Supplementary Zoning Map Number Thirty-three A (33-A) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 25th day of August 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY



ATTEST:

William O. Whiteford
William O. Whiteford
Director of Administration

Fred B. Boleum Jr.

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AUG 25 1969

HARFORD COUNTY
PLANNING AND ZONING COMMISSION
BEL AIR, MARYLAND

RECEIVED FOR RECORD
& RECORDED IN LIBER *484*
NO. *2* FOLIO *392* OF THE

AUG 27 11 34 AM '69

Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

LIBER

2 PAGE 393

ORDINANCE NO. 6-R-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty-five (55) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on July 14, 1969):

An area, consisting of approximately six (6) acres approximately 400 feet off the South side of Bel Air Road (Route 1), approximately 600 feet West of Whitaker Mill Road, from an "A-1" Agricultural District to an "M-1" Light Industrial District; said area to be so designated on Supplementary Zoning Map Number Fifty-five D (55-D) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty-five (55) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "M-1" Light Industrial District; said area being designated on Supplementary Zoning Map Number Fifty-five D (55-D) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 28th day of August 1969.



William O. Whiteford
William O. Whiteford
Director of Administration

COUNTY COMMISSIONERS OF HARFORD COUNTY

John H. O'Neill
John H. O'Neill
Vice Chairman

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& RECORDED IN LIBER 2184
NO. 2 PAGE 393 OF THE
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Ord. RECORDS HARFORD
COUNTY, MD. EXAMINED
PER GARLAND A. OREER.
CLERK

RECEIVED

AUG 25 1969

HARFORD COUNTY
PLANNING AND ZONING COMMISSION
BEL AIR, MARYLAND

LIBER 2 PAGE 394

ORDINANCE NO. 6-Q-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Nineteen (19) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Fifth Election District of Harford County, as follows (a public hearing thereon having been held on February 17, 1969):

An area, consisting of approximately one and one-half (1 1/2) acres on the North side of Dublin Road (Route 440), approximately 200 feet East of Whiteford Road (Route 136), from an "R-2" Urban Residence District to a "B-1" Neighborhood Business District; said area to be so designated on Supplementary Zoning Map Number Nineteen A (19-A) of Harford County, Maryland.

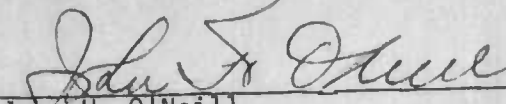
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Nineteen (19) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "R-2" Urban Residence District to a "B-1" Neighborhood Business District; said area being designated on Supplementary Zoning Map Number Nineteen A (19-A) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

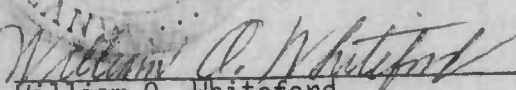
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 25th day of August 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY


John H. O'Neill
Vice Chairman




William O. Whiteford
Director of Administration

RECEIVED FOR RECORD
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NO. 394 OF THE

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Ord. RECORDED HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

RECEIVED

AUG 25 1969

HARFORD COUNTY
PLANNING AND ZONING COMMISSION
BEL AIR, MARYLAND

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2 PAGE 395

ORDINANCE NO. 6-S-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Fifty (50) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Second Election District of Harford County, as follows (a public hearing thereon having been held on July 14, 1969):

An area, consisting of approximately one hundred and seventy (170) acres at the Northeast intersection of Calvary (Route 136) and James Run Roads from an "A-1" Agricultural District to an "M-2" General Industrial District; said area to be so designated on Supplementary Zoning Map Number Fifty B (50-B) of Harford County, Maryland.

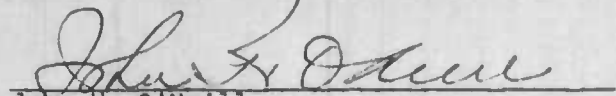
BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Fifty (50) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to an "M-2" General Industrial District; said area being designated on Supplementary Zoning Map Number Fifty B (50-B) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

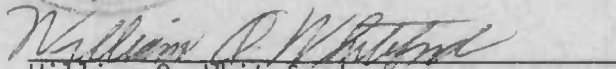
Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 25th day of August 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY


John H. O'Neill
Vice Chairman




William O. Whiteford
Director of Administration

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Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

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AUG 25 1969

HARFORD COUNTY
PLANNING AND ZONING COMMISSION
BEL AIR, MARYLAND

LIBER 2 PAGE 396

ORDINANCE NO. 6-T-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-six (66) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on August 26, 1969):

An area, consisting of approximately forty (40) acres on the East side of Freys Road at Otter Point Creek and Bush River and approximately 350 feet West of Flying Point Road; from an "A-1" Agricultural District and an "R-2" Urban Residence District to a "B-3" General Business District; said area to be so designated on Supplementary Zoning Map Number Sixty-six E (66-E) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Sixty-six (66) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District and an "R-2" Urban Residence District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Sixty-six E (66-E) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 14th day of September, 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY

John H. O'Neill
John H. O'Neill
Vice Chairman

ATTEST

William O. Whiteford
William O. Whiteford
Director of Administration

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NO. 396 OF THE

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Ord. RECORDS MANAGER
COUNTY, MD. & EXAMINED
PER CARLAND R. CHIEF
CLERK

LIBER

2 397

ORDINANCE NO. 6-U-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-one (41) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on October 7, 1969):

An area, consisting of approximately six and one-half (6 1/2) acres on the West side of Fountain Green Road (Route 543), approximately 300 to 700 feet South of Conowingo Road (Route 1) at Hickory from an "A-1" Agricultural District to a "B-3" General Business District; said area to be so designated on Supplementary Zoning Map Number Forty-one L (41-L) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-one (41) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Forty-one L (41-L) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 10th day of November, 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY



ATTEST
William O. Whiteford
Director of Administration

Thomas J. Hatem
Chairman

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& RECORDED IN LIBER 2
NO. 397 OF THE

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Ad. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER CARLAND R. GREEN
CLERK

LIBER

2 PAGE 338

HARFORD COUNTY PRIVATE ROAD ORDINANCE NO. 18-A

An Ordinance passed under and by virtue of the power and authority of the Code of Public Local Laws of Harford County, 1965 Edition, as amended, being Article 13 of the Code of Public Local Laws of Maryland, sub-title, "Roads and Public Works", Section 466 (f) and Section 467, and Harford County Ordinance No. 18.

WHEREAS, a majority of the abutting property owners possessing at least 51% of the frontage on the streets in Greenspring Hills development located on the southwest side of Mountain Road, in the First Election District of Harford County as shown on plats for the said Greenspring Hills development which are recorded among the Land Records of Harford County in Plat Book 8, Folio 29; Plat Book 9, Folios 6, 42, 84, and 97; and Plat Book 16, Folio 7; petitioned the County Commissioners of Harford County to construct said streets; and

WHEREAS, on March 31st, 1969, a public hearing was held by the County Commissioners of Harford County in the County Office Building, 45 South Main Street, Bel Air, Maryland, concerning the construction of the above referred to streets in the Greenspring Hills development; and

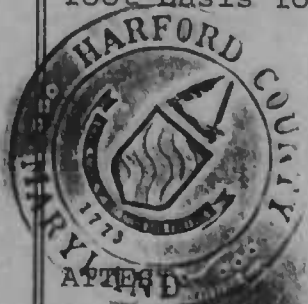
WHEREAS, after said public hearing the County Commissioners of Harford County approved the construction of said streets; and

WHEREAS, upon the construction and completion of said streets, the abutting properties will be assessed on a front foot basis for the cost of construction of said streets; and

WHEREAS, the Greenspring Hills Improvement Association, Inc., in which title to said streets is now vested, has executed a deed of said streets unto the County Commissioners of Harford County.

THEREFORE, be it ORDAINED by the Board of County Commissioners of Harford County pursuant to the power, authority, and requirements contained in the Code of Public Local Laws of Harford County, 1965 Edition, as amended, being Article 13 of the Code of Public Local Laws of Maryland, sub-title, "Roads and Public Works", Section 466 (f) and Section 467, and Harford County Ordinance No. 18, that the streets in Greenspring Hills development, located on the southwest side of Mountain Road, in the First Election District of Harford County, as shown on plats for the said Greenspring Hills development which are recorded among the Land Records of Harford County in Plat Book 8, Folio 29; Plat Book 9, Folios 6, 42, 84 and 97; and Plat Book 16, Folio 7; be constructed by the Highways Department of Harford County in compliance with standards agreed upon by the Petitioners and property owners of Greenspring Hills development and the County Commissioners of Harford County, and that upon the construction of said streets that said deed conveying fee simple title to said streets by the Greenspring Hills Improvement Association, Inc. to the County Commissioners of Harford County be recorded among the Land Records of Harford County and that the property owners along said streets shall be assessed on a front foot basis for the full costs of the construction of said streets.

ENACTED, this *21st* day of October, 1969,
by the COUNTY COMMISSIONERS OF HARFORD
COUNTY



ATTEST

William O. Whiteford
William O. Whiteford
Director of Administration

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DEC 1 11 03 AM '69

RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREER,
CLERK

Thomas J. Hatem
Thomas J. Hatem, Chairman

John H. O'Neill
John H. O'Neill, Vice-Chrmn

Fred B. Baldwin, Sr.
Fred B. Baldwin, Sr., Member

Please return to R. Prator

LWER 2 PAGE 405
ORDINANCE NO. 6-U-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Ordinance No. 6, being the Harford County Zoning Ordinance, by modifying Section 20.462 -- Non-Conforming Use of Article 20 -- Board of Appeals (a public hearing thereon having been held on December 1, 1969): by striking out the following lines thereof which reads:

"undertaken within one (1) year after the date of December 5, 1968, or within one (1) year from the date when the use of the building becomes non-conforming, whichever is the least restrictive requirement, except in cases where 35% extensions were authorized by the Board during the five (5) year period from December 5, 1957, to December 5, 1962, or the four (4) year period from December 5, 1962, to December 5, 1966, or the two (2) year period from December 5, 1966, to December 5, 1968, inclusive."

and in lieu thereof, insert the following which reads:

"undertaken within the time period between December 5, 1969, and the date when the current Zoning Ordinance is updated, revised and adopted by the Board of County Commissioners, except in cases where 35% extensions were authorized by the Board during the five (5) year period from December 5, 1957, to December 5, 1962; or the four (4) year period from December 5, 1962, to December 5, 1966; or the two (2) year period from December 5, 1966, to December 5, 1968; or the one (1) year period from December 5, 1968, to December 5, 1969; inclusive"

BE IT ENACTED AND ORDAINED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Ordinance No. 6, the Harford County Zoning Ordinance be and it is hereby amended by modifying Section 20.462 -- Non-Conforming Uses of Article 20 -- Board of Appeals, by striking out the following lines thereof which reads:

"undertaken within one (1) year after the date of December 5, 1968,

or within one (1) year from the date when the use of the building becomes non-conforming, whichever is the least restrictive requirement, except in cases where 35% extensions were authorized by the Board during the five (5) year period from December 5, 1957, to December 5, 1962, or the four (4) year period from December 5, 1962, to December 5, 1966, or the two (2) year period from December 5, 1966, to December 5, 1968, inclusive."

and in lieu thereof, insert the following:

"undertaken within the time period between December 5, 1969, and the date when the current Zoning Ordinance is updated, revised and adopted by the Board of County Commissioners, except in cases where 35% extensions were authorized by the Board during the five (5) year period from December 5, 1957, to December 5, 1962; or the four (4) year period from December 5, 1962, to December 5, 1966; or the two (2) year period from December 5, 1966, to December 5, 1968; or the one (1) year period from December 5, 1968, to December 5, 1969; inclusive"

Section 2. That the Ordinance shall take effect as of December 5, 1969.

Approved this 7th day of December, 1969.

COUNTY COMMISSIONERS OF HARFORD COUNTY

Thomas J. Hatem

Thomas J. Hatem
Chairman



William D. Whiteford
William D. Whiteford
Director of Administration

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& RECORDED IN LIBER 2-401
NO. 2 OF THE

DEC 5 3 18 PM '69

Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREEN
CLERK

LIBER 2 402

HARFORD COUNTY ORDINANCE NO. 25

An Ordinance to repeal Harford County Ordinance No. 15 and re-enact under and by virtue of the power and authority vested in the County Commissioners of Harford County under Article 25, Section 3, Sub-section (f) of the Annotated Code of Maryland 1957 a new ordinance to be known as Harford County Ordinance No. 25 to provide for the establishment of a Civil Service System for Harford County, State of Maryland.

Section 1. All positions in the County are hereby divided into the Exempt Service and the Civil Service.

The Exempt Service shall consist of:

1. All elected officials of Harford County.
2. All County attorneys under retainer.
3. Members of boards, commissioners, and committees.
4. Officials whose appointment and/or compensation is prescribed by law.
5. Consultants and other persons rendering temporary service under contract.
6. All personnel under the jurisdiction of the Circuit Court.
7. All temporary employees.

The Civil Service shall include all positions in the County except those placed in the exempt Service by this Ordinance.

Any form of discrimination against any Civil Service employee or applicant on account of race, color, creed, national origin, sex and/or political affiliation, except political affiliation or belief subversive to the laws of the State of Maryland or of the United States, is hereby prohibited.

Section 2. Authority is vested in a Civil Service Board to promulgate rules and regulations governing all aspects of employment in the Civil Service, subject to approval of the County Commissioners.

The Civil Service Board shall be composed of three registered voters of Harford County who favor the application of Civil Service principles to public employment and who shall serve without compensation for three-year terms or until his or her successor takes office, except that any member appointed to fill

Harford County Ordinance No. 25
1/1/70

Page 2

a vacancy shall be appointed only for the remainder of that term. However, the terms of the members first appointed shall be one, two and three years, respectively.

Not more than two members of the Civil Service Board shall be affiliated with the same political party.

No members of the Board shall hold any paid County office.

Section 3. A County Personnel Office, under the direction of the Director of Administration, headed by a Personnel Administrator, shall exist for the purpose of implementing the rules and regulations promulgated by the Civil Service Board and approved by the County Commissioners.

The Personnel Administrator shall be appointed by the County Commissioners.

Section 4. Any proposed amendment or change to this ordinance shall be referred to the Civil Service Board for evaluation and recommendation.

Section 5. All annual and sick leave accrued under Ordinance No. 15 shall be retained. If any Section, Sub-section, Paragraph, Sentence, Clause or Phrase of this Ordinance is for any reason held to be invalid by a Court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance.

This Ordinance shall take effect January 1, 1970.

PASSED THIS 29th DAY OF December, 1969.

Thomas J. Hatem
Thomas J. Hatem, Chairman

John H. O'Neill
John H. O'Neill, Vice-Chairman

Fred B. Baldwin
Fred B. Baldwin, Member



William O. Whiteford
William O. Whiteford
Director of Administration

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Ord. RECORDS HARBOR
COUNTY, MD. & EXAMINER
H. OAKLAND R. GREEN
CLERK

LIBER

2 404

ORDINANCE NO. 6-X-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-nine (49) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on January 26, 1970):

An area, consisting of approximately thirty-six (36) acres, situate 400 feet off the South side of Bel Air Road (Route 1) at the East intersection of Toll Gate Road; from an "A-1" Agricultural District to a "B-3" General Business District; said area to be so designated on Supplementary Zoning Map Number Forty-Nine D (49-D) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-Nine (49) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Forty-Nine D (49-D) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 17th day of May, 1970.

COUNTY COMMISSIONERS OF HARFORD COUNTY

Thomas J. Hatem
Thomas J. Hatem
Chairman



William O. Whiteford
William O. Whiteford
Director of Administration

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Ord. RECORDS HARFORD
COUNTY, MD. & EXAMINED
PER GARLAND R. GREEN
CLERK

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2 405

ORDINANCE NO. 6-W-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Forty-two (42) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Second Election District of Harford County, as follows (a public hearing thereon having been held on March 23, 1970):

An area, consisting of approximately two-thirds (2/3) of an acre as lot no. 4 (Four) on the North side of Woodside Drive in the Woodside Development, approximately 73 feet West of Churchville Road (Route 22) from an "R-2" Urban Residence District to a "B-3" General Business District; said area to be so designated on Supplementary Zoning Map Number Forty-two C (42-C) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Map Number Forty-two (42) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "R-2" Urban Residence District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Forty-two C (42-C) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 30th ~~29th~~ day of June, 1970.

COUNTY COMMISSIONERS OF HARFORD COUNTY



William O. Whiteford
Director of Administration

Thomas J. Hatem
Thomas J. Hatem
Chairman

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Ord. RECORDS HARFORD
COUNTY MD. & EXAMINED
PER GARLAND R. GREER
CLERK

ORDINANCE NO. 6-Z-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Maps Numbers Fifty-six (56) and Sixty-one (61) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on January 19, 1970):

An area, consisting of approximately three and one-half (3 1/2) acres on the West side of Emmorton Road (Route 24) approximately 200 feet North of Singer Road from an "A-1" Agricultural District to a "B-1" Neighborhood Business District; said area to be so designated on Supplementary Zoning Maps Numbers Fifty-six I (56-I) and Sixty-one J (61-J) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Maps Numbers Fifty-six (56) and Sixty-one (61) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-1" Neighborhood Business District; said area being designated on Supplementary Zoning Maps Numbers Fifty-six I (56-I) and Sixty-one J (61-J) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 30th day of June 1970.

COUNTY COMMISSIONERS OF HARFORD COUNTY

John H. O'Neill
John H. O'Neill
Vice Chairman



William G. Whiteford
William G. Whiteford
Director of Administration

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NO. 2 FOLIO 406 OF THE

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Ord. RECORDS HARFORD
COUNTY MD. & EXAMINED
PER GARLAND R. GREER
CLERK

LIB 2 407

ORDINANCE NO. 6-Y-6

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Map Number Sixty-one (61) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the First Election District of Harford County, as follows (a public hearing thereon having been held on March 16, 1970):

An area, consisting of approximately two (2) acres at the Northwest quadrant of Mountain (Route 152) and Franklinville Roads from an "A-1" Agricultural District to a "B-3" General Business District; said area to be so designated on Supplementary Zoning Map Number Sixty-one I (61-I) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:


Section 1. That Zoning Map Number Sixty-one (61) of Harford County, Maryland, dated July 11, 1966, be and it is hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-3" General Business District; said area being designated on Supplementary Zoning Map Number Sixty-one I (61-I) of Harford County, Maryland; the said Zoning Map to be considered as a part hereof, as fully as if a copy were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 30th day of June, 1970.

COUNTY COMMISSIONERS OF HARFORD COUNTY

Thomas J. Hatem
Thomas J. Hatem
Chairman


William D. Whiteford
Director of Administration

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2 PAGE 408

ORDINANCE NO. 6-A-7

Amendment of the Harford County Zoning Ordinance

An Ordinance to amend Zoning Maps Numbers Forty-eight (48) and Fifty-five (55) of Harford County, Maryland, dated July 11, 1966, rezoning an area thereon shown, situate in the Third Election District of Harford County, as follows (a public hearing thereon having been held on April 13, 1970):

An area, consisting of approximately twenty-four (24) acres approximately two hundred (200) feet off the North side of Bel Air Road (Route 1) opposite Old Joppa Road intersection and extending to the East side of the Bel Air Bypass (Route 1) from an "A-1" Agricultural District to a "B-3" General Business District; said area to be so designated on Supplementary Zoning Maps Numbers Forty-eight B (48-B) and Fifty-five E (55-E) of Harford County, Maryland.

BE IT ORDAINED AND ENACTED BY THE COUNTY COMMISSIONERS OF HARFORD COUNTY, MARYLAND, as follows:

Section 1. That Zoning Maps Numbers Forty-eight (48) and Fifty-five (55) of Harford County, Maryland, dated July 11, 1966, be and they are hereby amended so as to rezone the area described above from an "A-1" Agricultural District to a "B-3" General Business District; said area being designated on Supplementary Zoning Maps Numbers Forty-eight B (48-B) and Fifty-five E (55-E) of Harford County, Maryland; the said Zoning Maps to be considered as a part hereof, as fully as if copies were hereto attached.

Section 2. That the Ordinance shall take effect as of the date of its passage.

Approved this 1st day of September, 1970.

COUNTY COMMISSIONERS OF HARFORD COUNTY

Fred B. Baldwin, Sr.
Fred B. Baldwin, Sr.
Chairman



[Signature]

Administration

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CLERK OF THE

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CHIEF CLERK
HARFORD COUNTY
CLERK OF THE